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**HUNTERS POINT SHIPYARD
RESTORATION ADVISORY BOARD (RAB) - MEETING AGENDA
THURSDAY, 27 JANUARY 2005**

Day/Date:

Thursday – 27 January 2005

Location: Building 101**Time:**

6:00 p.m. to 8:00 p.m.

**Hunters Point Shipyard
Building 101
San Francisco, CA 94124**

Facilitator:

Marsha Pendergrass

Time	Topic	Leader
6:00 p.m. – 6:05 p.m.	Welcome/Introductions/Agenda Review	Marsha Pendergrass <i>Facilitator</i>
6:05 p.m. – 6:20 p.m.	Approval of Meeting Minutes from the 21 October and 9 December 2004 RAB Meetings • Action Items Review	Marsha Pendergrass
6:20 p.m. – 6:35 p.m.	Navy Announcements	Keith Forman <i>Navy Co-chair</i>
	Community Co-chair Report/Other Announcements	Maurice Campbell <i>Community Co-chair</i>
6:35 p.m. – 7:10 p.m.	Open Space Plan and Community Facility Parcels	Michael Cohen <i>City of San Francisco Mayor's Office of Economic Development</i>
7:10 p.m. – 7:20 p.m.	BREAK	
7:20 p.m. – 7:40 p.m.	RAB Meeting Date and Location Discussion	Keith Forman
7:40 p.m. – 7:55 p.m.	Subcommittee Reports	Subcommittee Leaders
7:55 p.m. – 8:00 p.m.	Community Comment Period	Marsha Pendergrass
8:00p.m.	Adjournment	Marsha Pendergrass

HPS web site:

<http://www.efdswnavfac.navy.mil/Environmental/HuntersPoint.htm>

RAB Navy Contact:

Mr. Keith Forman (619) 532-0913 or (415) 308-1458

HUNTERS POINT SHIPYARD
RESTORATION ADVISORY BOARD MEETING MINUTES
9 DECEMBER 2004

These minutes summarize the discussions and presentations from the Restoration Advisory Board (RAB) meeting held from 6:05 p.m. to 8:25 p.m. on Thursday, December 9, 2004, at the Bayview Opera House. A verbatim transcript was also prepared for the meeting and is available in the Information Repository for Hunters Point Shipyard (HPS) and on the Internet at <http://www.efds.w.navy.mil/Environmental/HuntersPoint.htm#trans>. The list of agenda topics is provided below. Attachment A provides a list of attendees. Attachment B includes action items that were requested and/or committed to by RAB members during the meeting.

AGENDA TOPICS

- 1) Welcome/Introductions/Agenda Review and Meeting Minutes Review
- 2) Navy and Community Co-Chair Reports/Other Announcements
- 3) Year in Review – Successes of 2004
- 4) Subcommittee Updates
- 5) Community Comment Period
- 6) Adjournment

MEETING HANDOUTS

- Agenda for December 9, 2004 RAB Meeting
- Meeting Minutes from October 21, 2004 RAB Meeting, including:
 - Action Items from October 21, 2004 RAB Meeting
 - Table 1, RAB Roll-Call Sheet
- Monthly Progress Report, October 2004
- PowerPoint Presentation, BRAC PMO West Hunters Point Projects: 2004 in Review, 2005: What's the Plan Ahead, December 9, 2004
- Handout, April 2001 Potassium Permanganate Injection and Spill to San Francisco Bay
- Meeting Minutes, HPS RAB, Technical Review Subcommittee, November 3, 2004
- Technical Review Subcommittee Year in Review
- Handout, Proposed RAB Resolution, Request for the Navy and Regulatory Agencies to Further Investigate the Hazards Associated with a Liquefaction Event at the Parcel E-2 Landfill
- Newsletter, Hunters Point Shipyard Cleanup News

Welcome/Introductions/Agenda and Meeting Minutes Review

Marsha Pendergrass, facilitator, called the meeting to order at 6:05 p.m., and all meeting attendees introduced themselves. Ms. Pendergrass stated that the number of RAB members in attendance did not meet the minimum requirements for a quorum. As a result, the vote on the October 2004 RAB meeting minutes would be postponed until the January 2005 RAB meeting.

1 Ms. Pendergrass reviewed the ongoing action items contained in the October RAB meeting
2 minutes and asked for the status of each item. The first item, regarding the AMC cranes at Dry
3 Dock 4, was amended. Keith Forman, RAB Co-Chair, stated that the work plan had been
4 submitted to David Terzian, property manager. Mr. Terzian will distribute the work plan to
5 those who are interested in reviewing it. Georgia Oliva, RAB member, requested that the RAB
6 be notified of the scheduled date for removal of the cranes. Mr. Forman agreed to send an e-mail
7 to the RAB once this date has been determined. The second item, regarding a written summary
8 that explained the release of potassium permanganate, was completed. Pat Brooks, Navy Lead
9 Remedial Project Manager (RPM), provided a handout on this topic. The third item, to arrange
10 with the San Francisco Redevelopment Agency for a presentation regarding planned reuse and
11 open space for Parcels A and B was completed. Amy Brownell, RAB member, stated that a
12 representative from the San Francisco Redevelopment Agency (SFRA) would give a
13 presentation on the planned reuse of Parcels A and B at the January RAB meeting.

14 Five new action items were identified in the October RAB meeting minutes. The first new
15 action item, regarding a fire suppression system at Parcel B, was completed. The second, third,
16 and fourth action items were carried over until the January 2005 RAB meeting. The fifth new
17 action item, regarding the previously calculated risk levels at the power plant, was amended. Mr.
18 Brooks stated that the Navy had discussed these levels with Laurie Lowman, Radiological
19 Affairs Support Office, and the calculated risk levels were very low; the risk levels are provided
20 in the Final Historical Radiological Assessment (HRA). Mr. Forman agreed to provide a
21 summary of these risk levels in the January 2005 monthly progress report.

22 **Navy and Community Co-Chair Reports/Other Announcements**

23 Mr. Forman stated that he was interested in receiving input on the RAB meeting location. Mr.
24 Forman stated that one option is to hold the meeting at Dago Mary's, but change the day of the
25 week on which the RAB meeting is held. Dago Mary's now serves dinner on Thursday, so the
26 RAB would be unable to meet there on Thursday nights. Other options include Building 101 on
27 the Shipyard or the Bayview Opera House. Mr. Forman requested that RAB members provide
28 input to himself, Maurice Campbell, RAB Co-Chair, or Carolyn Hunter, SulTech, by the end of
29 the year.

30 Mr. Campbell stated that he had distributed a handout of a RAB resolution regarding liquefaction
31 at Parcel E-2 to RAB members. The resolution was passed by the Economic Development
32 Subcommittee and reviewed by members of the Technological Review Subcommittee. The
33 resolution pertains to liquefaction at Parcel E-2 and its location adjacent to Parcel A. Mr.
34 Campbell stated that there is a 62 percent probability of a major earthquake in the San Francisco
35 Bay area by the year 2017. Information on the Landfill indicates that Parcel E-2 would be
36 subject to liquefaction, with 4 to 5 feet of lateral movement during a major earthquake. Mr.
37 Campbell stated that there are questions on the bentonite barrier, the impact of liquefaction on
38 the community, the impact on contaminant migration, and the seismic integrity of several
39 buildings on Parcels A, E, and E-2. Mr. Campbell stated that liquefaction did occur at HPS
40 during the 1989 Loma Prieta earthquake. Mr. Campbell noted that the necessary number of
41 RAB members was not in attendance to pass a vote on the RAB resolution.

42 **Reminder: The next RAB meeting will be held from 6:00 to 8:00 p.m. on Thursday,**
43 **January 27, 2005, at a location to be determined.**

1 **Year in Review – Successes of 2004**

2 Mr. Forman stated that he would provide an overview of the progress made at HPS during 2004
3 and the plan for 2005. Mr. Forman introduced the Navy team at HPS. Mr. Brooks is the Lead
4 RPM. Ralph Pearce, Navy RPM, is responsible for Parcel C and also works on the Navy
5 Radiological Program. Andrew Baughman, Navy RPM, is responsible for Parcel E-2. Peter
6 Stroganoff, Navy Resident Officer in Charge of Construction (ROICC), and Matt Lenz, Navy
7 ROICC, are responsible for fieldwork oversight conducted at HPS.

8 Mr. Forman stated that the overview of 2004 would include the key accomplishments at HPS
9 such as the HRA, removal actions, and treatability studies that were conducted. Mr. Forman
10 stated that he would present the upcoming 2005 projects by parcel.

11 Mr. Forman stated that escrow for Parcel A had closed on December 3, 2004, and the parcel had
12 been transferred to the SFRA. Parcel A is now controlled by SFRA and the City of San
13 Francisco.

14 The finalization of the HRA was another key accomplishment in 2004. Mr. Forman stated that
15 Ms. Lowman appreciates the comments and questions from the RAB on the HRA. Mr. Forman
16 stated that the basewide groundwater monitoring program (BGMP) sampling and analysis plan
17 was finalized. Mr. Forman gave credit to Mr. Brooks for the successful initiation of this
18 program. The landfill gas monitoring and control plan was finalized for Parcel E-2. This plan
19 will carry forward until the record of decision (ROD) is finalized for Parcel E-2. Mr. Forman
20 reminded the RAB that Parcel E-2 was created to simplify remediation of the Landfill, allowing
21 the community, the Navy, and the regulators to focus on the Landfill.

22 Mr. Forman stated that in 2004 the Navy reached consensus with the regulators on various
23 aspects of the risk assessment methodology. Mr. Forman noted that the Navy worked with Lea
24 Loizos, RAB member, to address the details of risk assessment methodology during a past
25 subcommittee meeting. Mr. Forman stated that weed abatement and fire prevention was
26 performed at HPS in 2004, and noted that no fires had occurred during the summer months. Mr.
27 Forman stated that the Navy had continued community outreach throughout 2004. Community
28 outreach activities included several special meetings that were held on Saturdays, some of which
29 discussed the HRA.

30 Mr. Forman stated that a treatability study is typically conducted at HPS to determine if a
31 particular remedy will be effective at HPS. These technologies are typically based around
32 groundwater contamination. Mr. Forman noted that zero-valent iron (ZVI) injection treatability
33 studies were being conducted at Building 123 in Parcel B and Building 272 in Parcel C. Mr.
34 Forman noted that Ryan Ahlersmeyer, Navy RPM, had given presentations on ZVI injection at
35 previous RAB meetings. Mr. Forman noted that a RAB field trip was conducted to visit a ZVI
36 site at HPS in September 2004.

37 A second type of treatability study conducted in 2004 was aerobic/anaerobic bioremediation.
38 Mr. Forman stated that Glenn Christensen, Navy RPM, was responsible for this treatability
39 study. The study is occurring at a groundwater plume at Building 134 in Parcel C. Mr. Forman
40 stated that, after lactic acid is injected into the ground, a waiting period is required to allow the
41 lactic acid to stimulate the natural bacteria to consume contamination. The study at Building 134
42 is currently in this waiting period.

1 The third type of treatability study conducted at HPS pertains to polychlorinated biphenyls
2 (PCB) in sediment at Parcel F. This treatment was developed by Dr. Richard Luthy at Stanford
3 University. Mr. Forman stated that Dr. Luthy had expressed interest in presenting this
4 technology to the RAB when results were available in 2005. Mr. Forman noted that small-scale
5 testing had showed promising results in the remediation of PCBs in sediment.

6 Mr. Forman presented a picture of the ZVI injection system at Building 272. Mr. Forman noted
7 that Mr. Ahlersmeyer had recently completed the injection of a second round of ZVI and that
8 monitoring results indicated over a 90 percent degradation of chlorinated compounds.

9 Mr. Forman presented a figure depicting the bioremediation treatability study. Mr. Forman
10 noted that this study is conducted in sequences. The first phase includes the injection of lactic
11 acid. Mr. Forman also presented a figure showing the proposed demonstration area for the
12 Stanford Sediment Treatability Study. Mr. Forman noted that the initial fieldwork for this study
13 was conducted in August 2004.

14 Mr. Forman noted that 2004 was a very productive year both in fieldwork and in administrative
15 documents. Mr. Forman stated that the shoreline cleanup of Parcel E was completed. Jose
16 Payne, Navy RPM, was responsible for this work. Mr. Forman stated that the total petroleum
17 hydrocarbon (TPH) site excavations were completed. Mr. Forman stated that numerous
18 underground storage tanks for fuel products were present at HPS. Over the past few decades,
19 spills and leaks of the tanks have occurred. Progress has been made on cleaning up the TPH. In
20 early 2004, a time-critical removal action (TCRA) was performed at Parcel D to remove
21 contamination from the seawall. Mr. Forman noted that there was disagreement regarding the
22 scope of the TCRA. As a result, the scale of this project was reduced by about 80 percent. Mr.
23 Forman noted that the largest stockpiles were removed from Parcels D and E. Mr. Payne was
24 also responsible for this project.

25 Mr. Forman noted that the metal reef and metal slag areas were successfully characterized in
26 three dimensions to determine the extent of contamination. Sampling was performed to
27 determine the types of contamination in these areas. Mr. Payne was responsible for this work.
28 The next step in 2005 for these areas is removal actions.

29 Mr. Forman stated that Building 322 was removed. This building was the former guard shack at
30 the front entrance of HPS. Mr. Forman stated that a radiological investigation was conducted at
31 this site, and the building and the area underneath the building were investigated. The site was
32 given a free release by the Department of Health Services. Mr. Forman noted that the removal of
33 Building 322 was an important step needed for the transfer of Parcel A.

34 Mr. Forman stated that a radiological scoping survey was conducted at Building 253. This
35 building is a six-story glass building that is also known as the Periscope Building. This survey
36 identified areas that require remediation.

37 Mr. Forman presented pictures showing the removal actions that he had discussed. Mr. Forman
38 showed before and after pictures of the shoreline cleanup at Parcel E-2. Mr. Forman noted that a
39 large amount of debris had been removed from the Parcel E-2 shoreline.

40 Mr. Forman noted that excavation of fuel lines at Parcel B involved a large area. In some areas,
41 soil was excavated to a depth of 10 feet. Mr. Brooks added that about 10,000 cubic yards of soil
42 was removed. Mr. Forman noted that the monitoring wells already in place were preserved.
43 Mr. Brooks noted that soil stockpiles in the area were covered during the excavation.

1 Mr. Stroganoff stated that the fieldwork took several months to complete. Mr. Forman also
2 presented a picture depicting the fuel line excavation after field activities were completed.

3 Mr. Forman presented a photograph of the Parcel D TCRA excavation. Mr. Forman noted that
4 the seawall planks were visible in the photograph and that free product contamination was
5 removed.

6 Mr. Forman presented a picture of offshore surveying activities at the metal slag and metal reef
7 areas. Field personnel investigated the bathymetry (measurement of the depth of bodies of
8 water) of the metal reef, including the depths of the area and the bottom contours. Samples were
9 also collected from this area to help identify characteristics of the reef.

10 Mr. Forman presented two pictures depicting the removal of Building 322. Mr. Forman noted
11 this building was removed quickly.

12 Mr. Forman noted that significant improvements were made at the Landfill, particularly in
13 stormwater runoff controls and monitoring. Mr. Forman noted that surface water runoff from
14 flows into San Francisco Bay. Improvements completed at the Landfill included gravel roads,
15 drainage ditches, an irrigation system, and a vegetative cover. Mr. Forman noted that wild geese
16 and other birds now visit the Landfill.

17 Mr. Forman stated that this concluded the overview of 2004 accomplishments. Mr. Forman
18 opened the floor to questions.

19 Ms. Oliva noted that Parcel A had been transferred and asked for a contact name for future
20 actions at the site. Ms. Oliva asked if the Navy would be interested in setting up a monthly
21 committee to determine the status of activities at Parcel A. Ms. Brownell responded that
22 Ms. Oliva could attend Community Advisory Committee public meetings to receive future
23 information on Parcel A. Ms. Brownell stated that she would provide a contact name to the RAB
24 via e-mail. Mr. Forman noted that Mr. Terzian, Parcel A property manager, might have some
25 knowledge on contacts for information on Parcel A. Ms. Oliva stated that she was uncertain
26 regarding the lease agreement between Mr. Terzian and SFRA.

27 Mr. Campbell asked how Building 253 obtained its name as the Periscope Building. Mr. Pearce
28 stated that periscopes were tested at this building.

29 Raymond Tompkins, RAB member, requested several technical items be included in future
30 presentations on the ZVI treatability study. These items include a cost analysis between a carbon
31 filtration system and ZVI, the chemical reactions occurring, any synergistic effects, and
32 confirmation sampling results. Mr. Tompkins also requested that Dr. Luthy give a presentation
33 to the technological subcommittee before his presentation at the RAB meeting. Mr. Forman
34 agreed that he would coordinate these presentations with Dr. Luthy.

35 **Navy's Plans at HPS for 2005**

36 Mr. Forman presented an overview of the goals for 2005. Mr. Forman stated that feasibility
37 studies (FS) were planned for Parcels C, D, E, E-2, and F. Mr. Forman noted that although the
38 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
39 investigation had moved forward at Parcel B, this parcel would now take a step backwards to
40 conduct an excavation. Mr. Forman stated that the Navy is planning the removal of the metal
41 slag and metal reef areas. Radiological surveys and a methane investigation are planned at IR-

1 07/18. Mr. Forman noted that this site is located near the base entrance and has a flat topography
2 due to extensive excavation since 1999.

3 Dr. Luthy will conduct the PCB treatability study at Parcel F. This study uses activated carbon
4 to remove PCBs from sediments. Mr. Forman stated that the treatability studies using ZVI and
5 sequential bioremediation will be continued. The Navy is planning to remove the PCB hotspots
6 around the Landfill. Mr. Forman noted that results of previous investigations identified areas of
7 elevated PCB concentrations in soil. The Navy is also planning to remove radiological devices
8 from the radiological disposal area.

9 Mr. Forman discussed the goals for 2005 by parcel. A ROD has been completed for Parcel B.
10 Since the ROD was completed, new information on the site became available. In addition, a
11 5-year review of the ROD was completed last year. This review indicated that the ROD does not
12 adequately address the issues at Parcel B. As a result, the Navy is taking a step backwards and
13 completing a technical memorandum in support of a ROD amendment (TMSRA). The TMSRA
14 will present the new information and different alternatives for Parcel B. The Navy will also
15 complete the groundwater annual report. In addition, a 5-year performance review of the
16 remedial action monitoring plan (RAMP) at Parcel B will be conducted. This 5-year review is
17 required by the ROD to ensure that the monitoring plan is still a good fit for the site.

18 Additional projects planned for Parcel B include continued groundwater monitoring, methane
19 soil-gas and radiological surveys at IR-07/18, a soil-gas survey near the Parcel B and C
20 boundary, and the ongoing ZVI treatability study at Building 123.

21 Mr. Forman stated that Parcel C is a very complex parcel. Parcel C contains many contaminants
22 as well as groundwater plumes. An FS is planned for Parcel C. The Navy will continue
23 quarterly groundwater monitoring under the BGMP. The aerobic/anaerobic bioremediation
24 study at Building 134 and the ongoing ZVI treatability study at Building 272 will also be
25 continued.

26 Mr. Forman noted that Parcel D is one of the cleaner parcels. The major documents planned for
27 this parcel include a draft final revised FS, a proposed plan, and a TCRA closeout report to
28 *finalize the removal action at the seawall. The Navy will continue groundwater monitoring at*
29 Parcel D under the BGMP. Mr. Forman stated that Mr. Pearce would work with Ms. Lowman to
30 complete radiological surveys at Parcel D. Mr. Forman noted that Parcels B and D were
31 currently "neck-in-neck" in the CERCLA process and it would be interesting to see which parcel
32 moves through the process faster.

33 Mr. Forman stated that housekeeping activities were performed at Parcel E in 2004 and that
34 removal actions were planned for 2005. For Parcel E, the major document planned is a
35 combined remedial investigation/FS report. Supporting documents for the Parcel E RI/FS are
36 also planned, including a shoreline technical memorandum. This technical memorandum
37 presents the results of sampling conducted along the shoreline in 2003. Removal actions are
38 planned for Parcel E at the metal debris reef and at the IR-02 Radium Dial Disposal Area.
39 Mr. Forman presented a picture of the metal debris reef. The metal debris reef includes molten
40 metal and cables. Results of sampling activities indicated that metals are not leaching into San
41 Francisco Bay. However, the Navy is planning to conduct a removal action the metal debris reef
42 in 2005.

1 Mr. Forman stated that the major document planned for 2005 for Parcel E-2 is the Landfill RI/FS
2 report, including draft and final versions. This document will present information on the
3 Landfill, discuss alternatives to address the Landfill, and present costs and benefits associated
4 with each alternative. The Navy is also planning a removal action at PCB hotspots in Parcel E-2.
5 Projects that will continue in 2005 include landfill cap maintenance, stormwater monitoring,
6 landfill gas monitoring, and landfill groundwater extraction system operations and maintenance.
7 The Navy will continue to present the results of landfill gas monitoring in the monthly progress
8 reports.

9 Mr. Forman stated that Parcel F includes the portion of San Francisco Bay that is owned by the
10 Navy. The Navy plans to finalize the validation study in 2005. Mr. Forman explained that a
11 validation study presents the results of additional data. Mr. Forman stated that sampling at
12 Parcel F was "fine-tuned"; therefore, adequate data are now available to move forward to an FS.
13 The Navy plans to complete a draft FS in 2005. Another project planned for Parcel F is the field-
14 scale treatability study with Stanford University. As previously discussed, this study uses
15 activated carbon to combine with PCBs to minimize their risk to the environment.

16 Mr. Forman opened the floor to questions. Mr. Tompkins asked which gases, if any, are
17 produced during the aerobic/anaerobic bioremediation and if monitoring was being conducted.
18 Mr. Forman responded that this project is currently only in the initial phase of completion.
19 Mr. Brooks added that the gases expected to be produced include ethene, ethane, and carbon
20 dioxide.

21 Mr. Tompkins stated that during completion of the breast cancer study conducted with the San
22 Francisco Health Department, it was identified that a building at HPS was used for disposal of
23 electrical transformers. The building had concentrations of PCBs that were 38,500 times greater
24 than U.S. Environmental Protection Agency guidelines. Mr. Tompkins asked if this area was
25 included in the hotspot removal that Mr. Forman had discussed for Parcel E-2. Mr. Forman
26 responded that PCB hotspot areas were determined based on sampling and step-out sampling
27 results and refer to areas containing the highest concentrations of PCBs. Mr. Forman stated that
28 he was unfamiliar with the building identified during the breast cancer study. Mr. Forman added
29 that the hotspot removal will occur along the Parcel E-2 shoreline where no buildings are
30 located.

31 Karen Pierce, RAB member, asked if the gate to HPS would be moved now that Parcel A had
32 been transferred. Mr. Forman responded that he was not aware of any changes to the entrance of
33 the base. Mr. Forman added that after the developer begins activities at the site, a road will be
34 created through the former location of Building 322 that travels straight into Parcel A.

35 Mr. Campbell asked for additional information on the Federal Facilities Agreement (FFA)
36 schedule and the subparceling of Parcel B. Mr. Forman responded that the FFA schedule was
37 being updated with the regulators. Mr. Forman stated that he would send a copy of the schedule
38 to interested RAB members when it is finalized. The schedule will ready no later than January
39 2005.

40 Mr. Campbell asked for clarification on the planned activities at IR-07/18. Mr. Forman stated
41 that several radiological surveys are planned for IR-07/18 because the HRA concluded that this
42 site is radiologically impacted.

1 Mr. Campbell asked the budget amount set for cleanup at HPS in 2005. Mr. Brooks responded
2 that a budget of \$14.6 million was provided for fiscal year 2005. The budget for projects
3 currently in progress includes another \$20 million. Mr. Brooks added that Stanford University
4 had received a \$1 million grant for the PCB treatability study for sediments.

5 Ms. Pendergrass noted the meeting was running behind schedule. Mr. Tompkins noted that no
6 subcommittee chairs were in attendance at the meeting, so the subcommittee reports would not
7 be able to occur. Mr. Tompkins motioned to extend the meeting by 10 minutes. The RAB
8 passed the motion to extend the meeting.

9 Tom Lanphar, Department of Toxic Substances Control (DTSC), commented that a large number
10 of investigations, removal actions, and treatability studies were planned for 2005. Mr. Lanphar
11 noted that it will be a very busy year and stated the importance of planning the schedule and the
12 RAB's time accordingly to be able to address the number of activities. Mr. Forman stated that it
13 would be helpful to have a robust and active Technological Subcommittee. Mr. Forman stated
14 that he would work with Ms. Loizos on this matter. Mr. Campbell stated that he may be able to
15 assist also.

16 Ms. Pierce stated that it is the RAB members' responsibility to take the information from the
17 meetings and share it with their community members. For this reason, it is important that RAB
18 members be given the opportunity for a full discussion of technical subjects at the meetings. Ms.
19 Pendergrass suggested that RAB members use the technical subcommittee meetings to ask all of
20 the exploratory questions and come back to the full RAB meetings prepared with the latest
21 information. Less time could be allocated to exploratory questions and enable time for a more
22 detailed discussion during the full RAB meetings.

23 Mr. Campbell noted that trucks have been uncovered as they were entering and leaving the HPS.
24 Mr. Campbell noted that this problem may be compounded during development activities at
25 HPS. Mr. Brooks stated that the Navy currently monitors all their trucks to ensure that they are
26 covered before leaving the HPS. The Navy has developed a system of rules that the truckers
27 must follow when conducting work on the base. Once work begins and trucks are moving on
28 and off the base, Mr. Forman stated that it is likely the developer would have a similar system as
29 the Navy's in place. Mr. Tompkins suggested that due to the extensive 2005 schedule it would
30 be beneficial if RAB members were provided information for review before the RAB meetings.
31 Mr. Tompkins asked if issues on remediation of radium dials were resolved between the State of
32 California and the Navy. Mr. Forman stated that Ms. Lowman is currently working on the work
33 plan for this activity. Mr. Lanphar needs to review and approve the radium dial removal work
34 plan before issues can be addressed.

35 Michael Boyd, Californians for Renewable Energy/Technical Assistance Grant (TAG) Recipient,
36 asked if a short-term schedule (3 to 4 months) listing upcoming documents and review periods
37 was available. Mr. Boyd would like to streamline the TAG public involvement opportunities
38 with upcoming review periods. Mr. Forman noted that the monthly progress report lists
39 documents and review periods for the current and upcoming month. In addition to the monthly
40 progress report that is handed out at the RAB meetings, Mr. Forman stated that once the FFA
41 schedule is finalized, he will distribute it Mr. Boyd, Mr. Campbell, and any other interested RAB
42 members.

1 Mr. Campbell thanked Mr. Forman and Mr. Brooks for their presentation. Mr. Campbell also
2 thanked the RAB members and the regulators for the work that was accomplished in 2004.
3 Mr. Campbell noted that a card had been distributed to each regulator from the RAB.

4 Subcommittee Updates

5 Actual updates were not given during the RAB meeting because the subcommittee chairs were
6 absent. The subcommittee updates will be tabled until the January 27, 2005 meeting. The
7 subcommittee meetings that will take place during January and February 2005 are listed below.

- 8 • Membership, Bylaws & Community Outreach Subcommittee (Melita Rines, Leader): The
9 next meeting of the Membership, Bylaws & Community Outreach Subcommittee will be
10 held on January 12, 2005, from 6:30 to 8:00 p.m. at the Anna E. Waden Library, 5075 Third
11 Street.
- 12 • Technical Review Subcommittee (Lea Loizos, Leader): The next meeting of the Technical
13 Review Subcommittee will be held on January 19, 2005, from 6:00 to 8:00 p.m. at Window
14 on the Shipyard, 4634 Third Street.
- 15 • Lowman Radiological Subcommittee (Ahimsa Sumchai, Leader): The next meeting of the
16 Lowman Radiological Subcommittee will be held on January 26, 2005, from 3:00 to 5:00
17 p.m. at the Anna E. Waden Library, 5075 Third Street.
- 18 • Economic Development Subcommittee (Chris Hanif, Leader): The next meeting of the
19 Economic Development Subcommittee will be held on February 1, 2005, from 2:30 to
20 4:30 p.m. at the Anna E. Waden Library, 5075 Third Street.

21 Community Comment Period

22 Ms. Pendergrass asked if there were any items that RAB members would like to see included on
23 the 2005 agenda. Mr. Tompkins suggested that a notice be sent to RAB members by e-mail,
24 asking them to identify any issues they would like to see covered by a presentation during one of
25 the meetings in 2005. Ms. Hunter suggested that a brainstorming of presentation topics for 2005
26 could be addressed during the subcommittee meetings and brought back to the full board.

27 Mr. Campbell gave a special thanks to Christine Niccoli, Niccoli Reporting, for her work at the
28 HPS RAB meetings.

29 There were no further comments or announcements. The meeting was adjourned at 8:25 p.m.

30 **Reminder: The next RAB meeting will be held from 6:00 to 8:00 P.M., Thursday evening,**
31 **January 27, 2005, in the Auditorium of Building 101 at Hunters Point Shipyard.**

**ATTACHMENT A
DECEMBER 9, 2004 - RAB MEETING
LIST OF ATTENDEES**

Name	Association
1. Andrew Baughman	Navy Remedial Project Manager
2. Michael Boyd	Californians for Renewable Energy, EMU
3. Pat Brooks	Navy, Lead Remedial Project Manager
4. Amy Brownell	RAB member, San Francisco Department of Public Health
5. Maurice Campbell	RAB Community Co-Chair, Community First Coalition (CFC)
6. Charles L. Dacus, Sr.	RAB member, Residents of the Southeast Sector (ROSES)
7. Keith Forman	Navy, RAB Co-Chair
8. Jennifer Gibson	SulTech
9. Chris Hanif	RAB member, Young Community Developers (YCD)
10. Carolyn Hunter	SulTech
11. Jackie Lane	RAB member, U.S. Environmental Protection Agency
12. Tom Lanphar	RAB member, Department of Toxic Substances Control
13. Lafo Lulu	All Islanders Gathering As One
14. Lisa Lulu	All Islanders Gathering As One
15. Matthew Lenz	Navy, Resident Officer in Charge of Construction (ROICC) Office
16. Quijuan Maloof	Pendergrass & Associates
17. Sara T. Mayer	Literacy for Environmental Justice
18. Sherlina Nageer	Literacy for Environmental Justice
19. Christine M. Niccoli	Niccoli Reporting, Court Reporter
20. Georgia Oliva	RAB member, Shipyard Artist
21. Ralph Pearce	Navy Remedial Project Manager
22. Karen Pierce	RAB member, Bayview/Hunters Point (BVHP) Democratic Club, HEAP
23. Marsha Pendergrass	Pendergrass & Associates
24. Jim Ponton	RAB member, San Francisco Bay Regional Water Quality Control Board
25. Melita Rines	RAB member, India Basin Neighborhood Association
26. Sam Ripley	RAB member, Samoan American Media Services
27. Matthew L. Shaps	Paul Hastings LLP for Lennar
28. Clifton Smith	C.J. Smith & Associates, Eagle Environmental Construction
29. Peter Stroganoff	Navy, ROICC Office
30. Ahimsa Sumchai	RAB member, BVHP Health and Environmental Resource Center
31. Raymond Tompkins	RAB member, BVHP Coalition on the Environment
32. Julia Vetromile	SulTech
33. Michael Work	RAB member, U.S. Environmental Protection Agency

ATTACHMENT B
9 DECEMBER 2004 - RAB MEETING
ACTION ITEMS

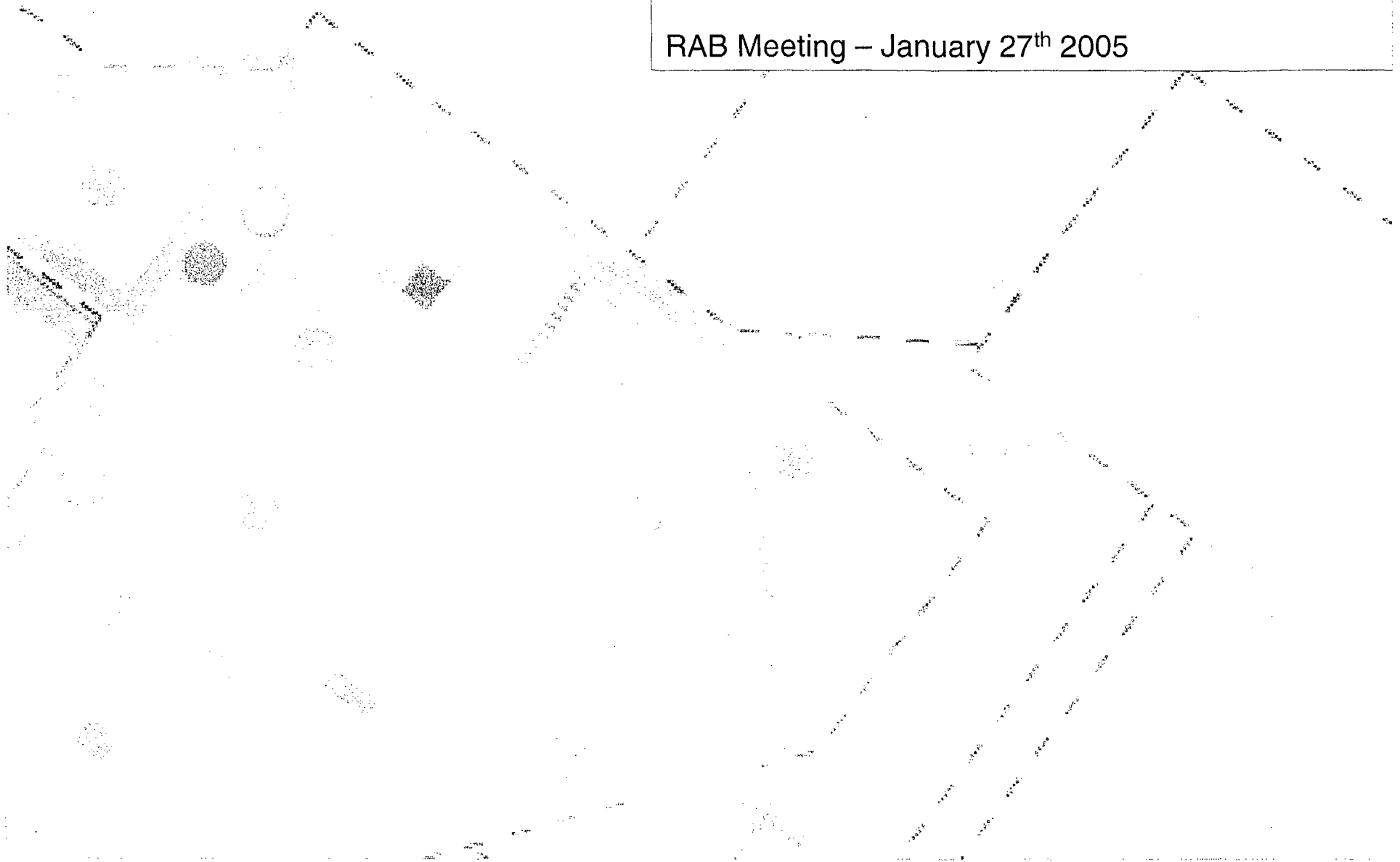
Item No.	Action Item	Person Authoring the Action Item	Due Date	Person/Agency Committing to Action Item	Resolution Status
Carry-Over Items					
1.	[Modified from October Action Item] Navy to notify David Terzian and Navy Caretaker Site Office regarding the scheduled date for removal of AMC's cranes at Dry Dock 4	RAB	January RAB	Navy/ Keith Forman	The work plan has been delivered to Mr. Terzian. No date has been scheduled yet for the crane removal.
2.	Navy to provide the poster board showing the extent of the fire at the Technological Review Subcommittee meeting	Raymond Tompkins	January RAB	Navy/Keith Forman	SFRA agreed to provide a presentation on the Parcel A and B acreage on January 19, 2005
3.	Ahimsa Sumchai to provide Navy with research on the quantity of methane production in aging landfills	Ahimsa Sumchai	January RAB	Ahimsa Sumchai	
4.	Consider translating RAB meeting documents into Samoan	Sam Ripley	January RAB	Carolyn Hunter	Follow up is being conducted on needs of the Samoan community for appropriate translation materials.
5.	[Modified from October Action Item] Navy to include a summary of the previously calculated risk levels from the power plant in the monthly progress report	Raymond Tompkins	January RAB	Navy/Keith Forman	See 3 at monthly progress report, Dec
New Items					
1.	Navy to invite Dr. Luthy to present at a technical subcommittee meeting	Raymond Tompkins	TBD	Navy/Keith Forman	Dr Luthy agreed to do so - when results are available

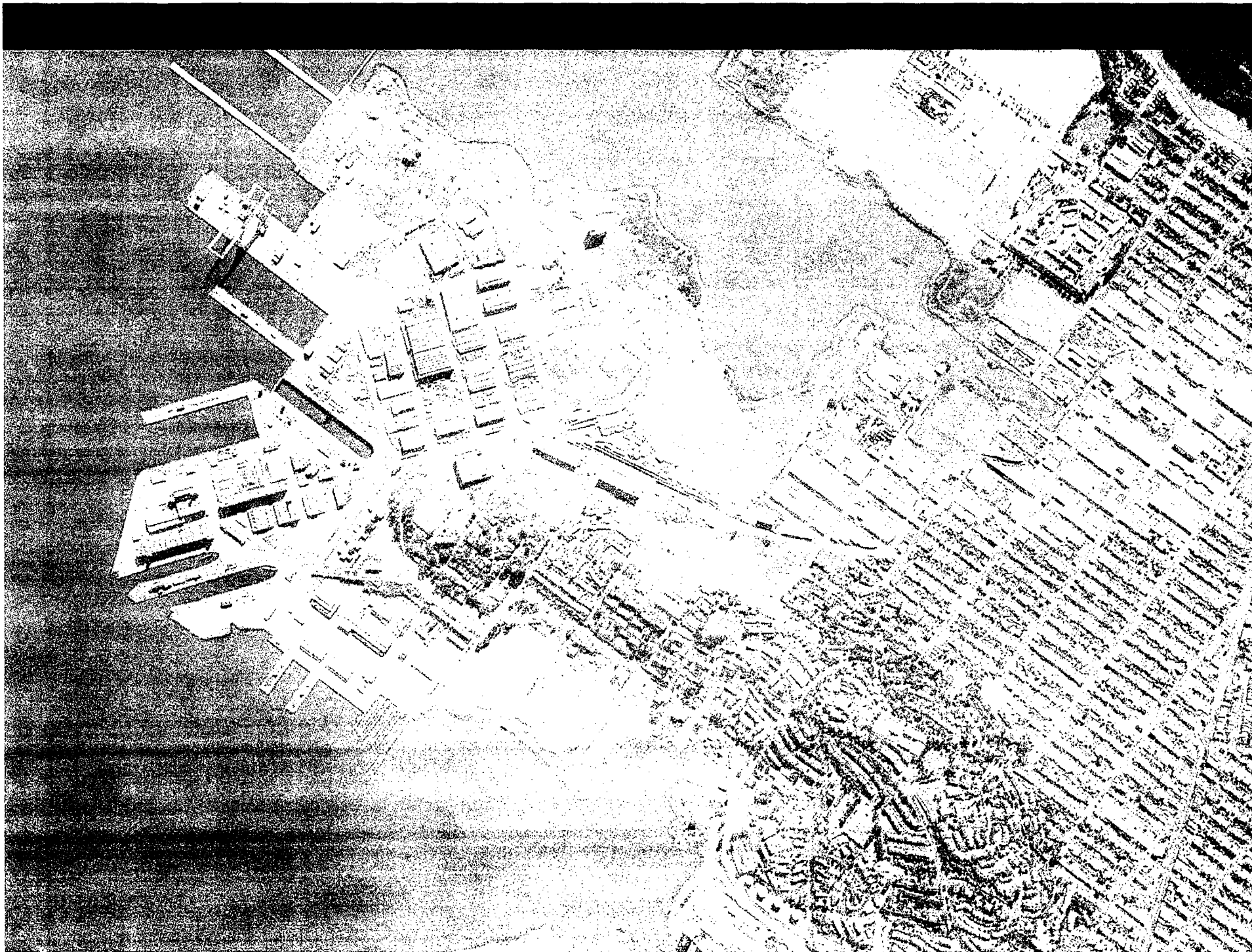
Fig 2

Hunters Point Shipyard - Phase 1

Open Space Plan

RAB Meeting – January 27th 2005

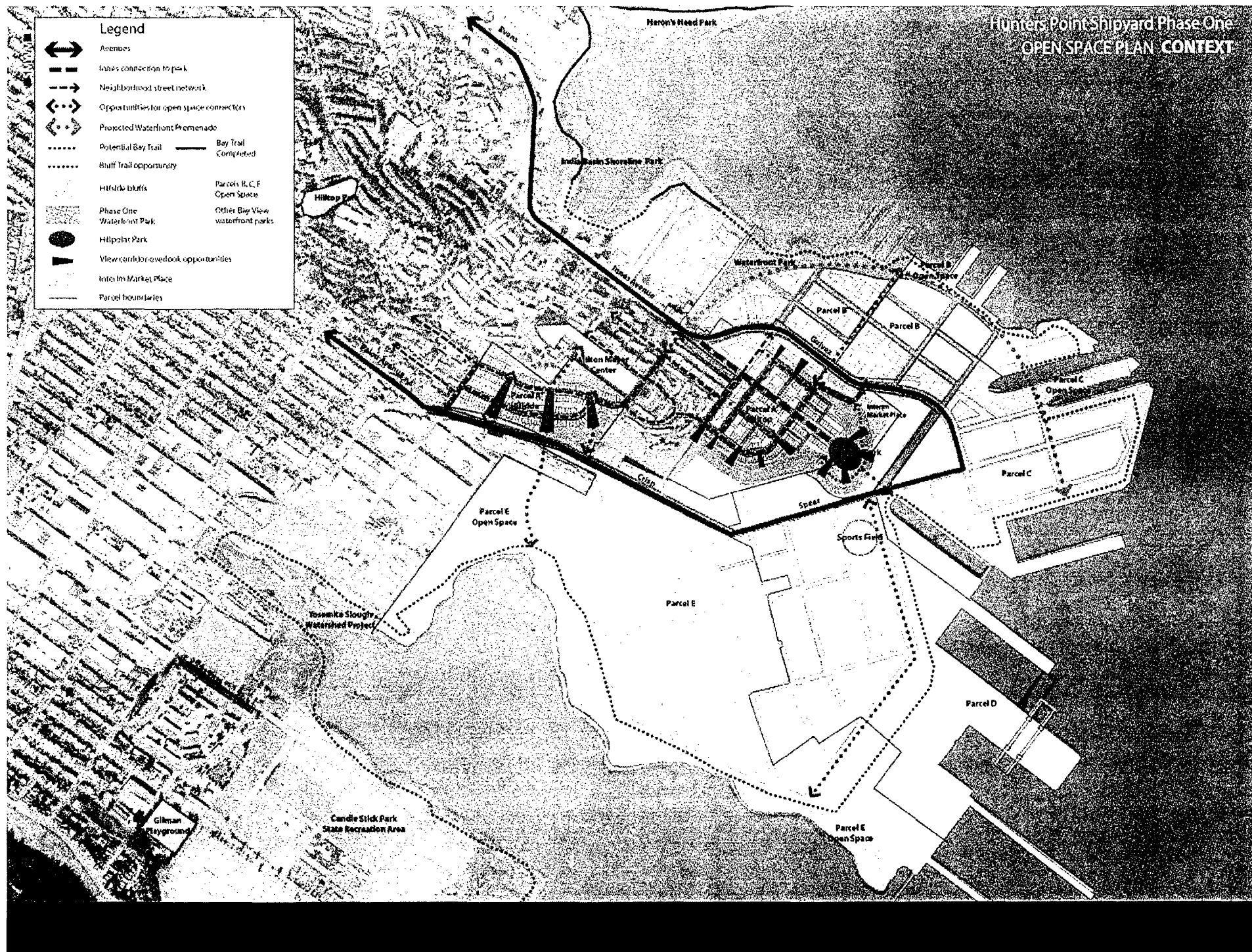


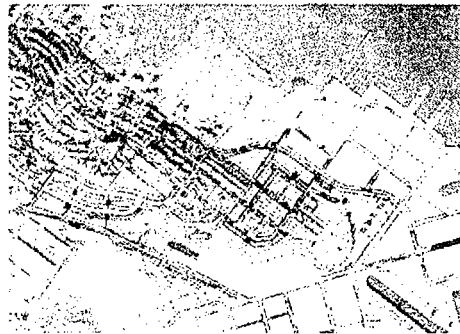
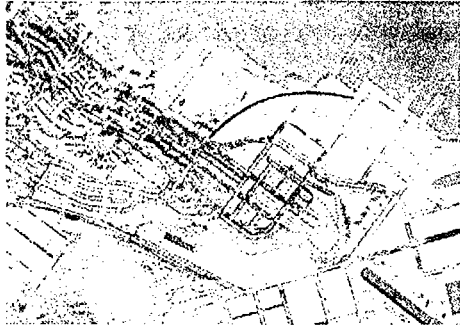
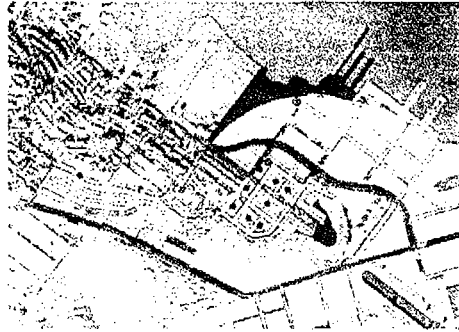


Hunters Point Shipyard Phase One OPEN SPACE PLAN CONTEXT

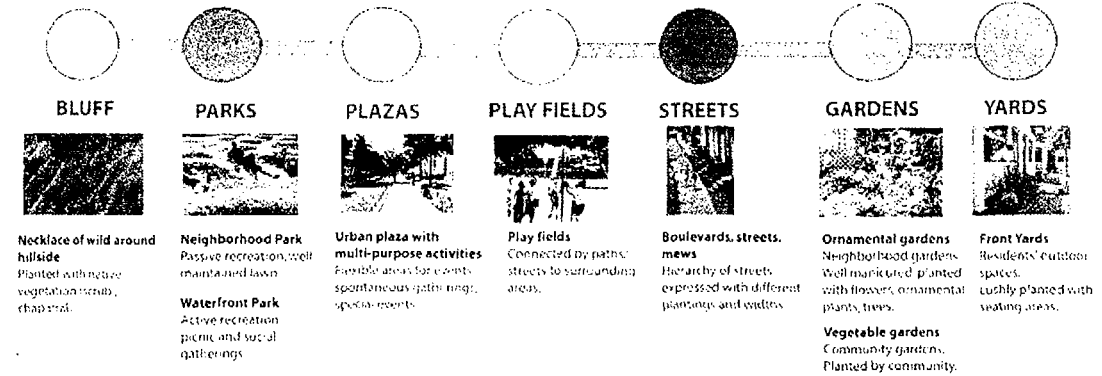
Legend

- Avenues
- Link's connection to park
- Neighborhood street network
- Opportunities for open space connectors
- Projected Waterfront Promenade
- Potential Bay Trail
- Bluff trail opportunity
- Hillside bluffs
- Phase One Waterfront Park
- Hillpoint Park
- View corridor/overlook opportunities
- Interim Market Place
- Parcel boundaries
- Bay Trail Corridor
- Parcels B, C, F Open Space
- Other Bay View waterfront parks

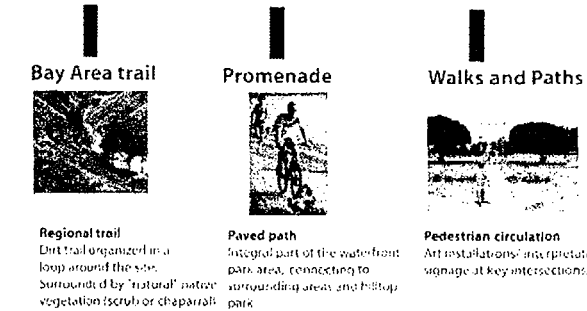




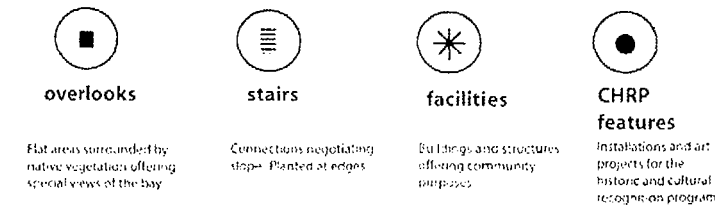
LANDSCAPE TYPES: places



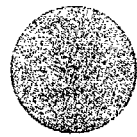
LINKAGES: threads



ELEMENTS: nodes



BLUFF



PARKS



PLAZAS



**PLAY
FIELDS**



STREETS



GARDENS

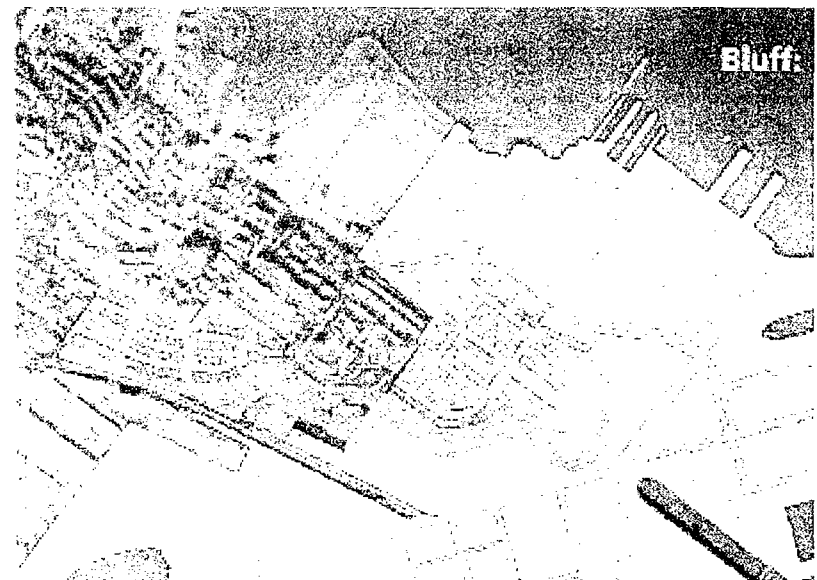


YARDS

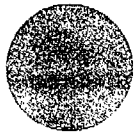
-Necklace of wild around hillside and hilltop

-Planted with native vegetation
(scrub , chaparral)

-Accommodating a ridge trail
around Hilltop park



:passive recreation, hiking, jogging, enjoying the views



BLUFF



PARKS



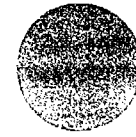
PLAZAS



**PLAY
FIELDS**



STREETS



GARDENS



YARDS

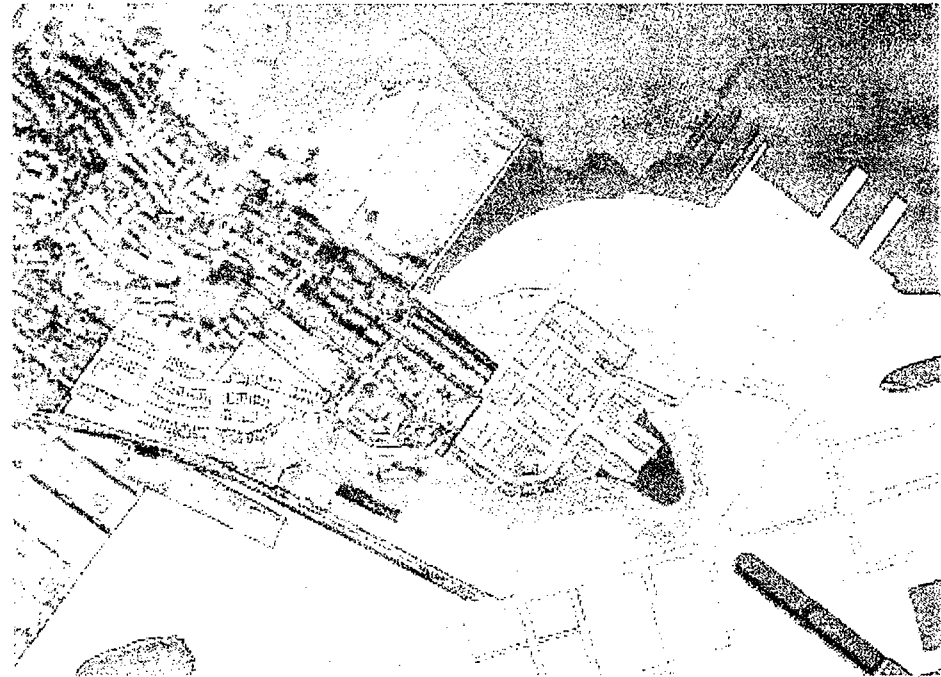
Waterfront Park

- Active recreation
- Soft areas with seating
- Clusters of trees
- Opportunities for CHRP installations
- Recreation facilities: restrooms, picnic tables, water fountains



Hilltop Park

- Passive recreation
- Well maintained lawn
- Furnished with benches
- Clusters of trees
- Public, civic

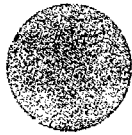


Waterfront Park: picnics, family gatherings, strolling, children play

Hilltop Park: hanging out, walking the dog, strolling, sunset watching, small and large socializing, special community or city-wide events



BLUFF



PARKS

PLAZAS



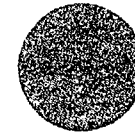
**PLAY
FIELDS**



STREETS



GARDENS



YARDS

-Linear plaza with soft and paved areas

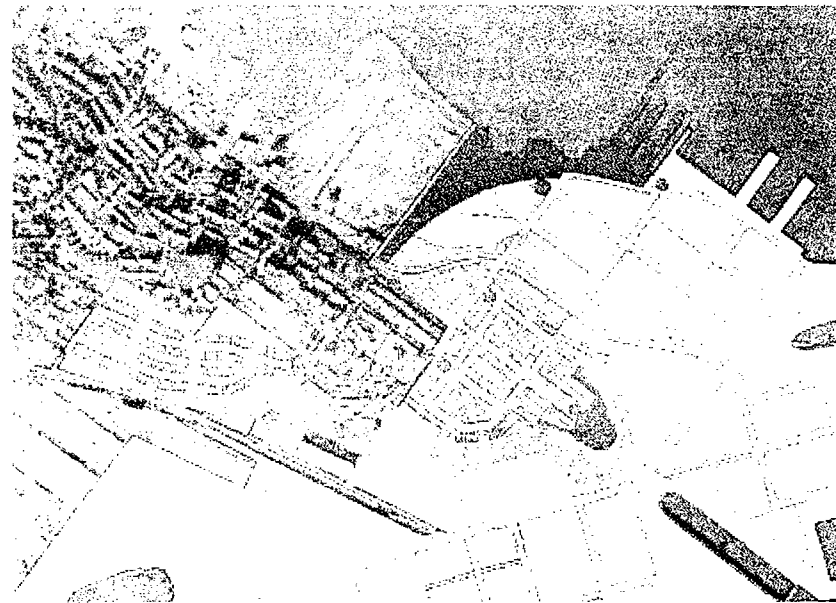
-Alternating tree clusters (eucalyptus and pear trees) along linear path

-Tot-lots and flower gardens

-Areas for spontaneous gatherings and special events

-Opportunities for CHRP installations

-Paved crosswalks at key locations



Circulation, strolling, resting, people watching, family-children play, bike riding, rollerblading, attending special events, etc.



BLUFF

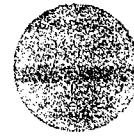


PARKS

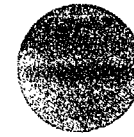


PLAZAS

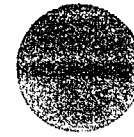
PLAY FIELDS



STREETS



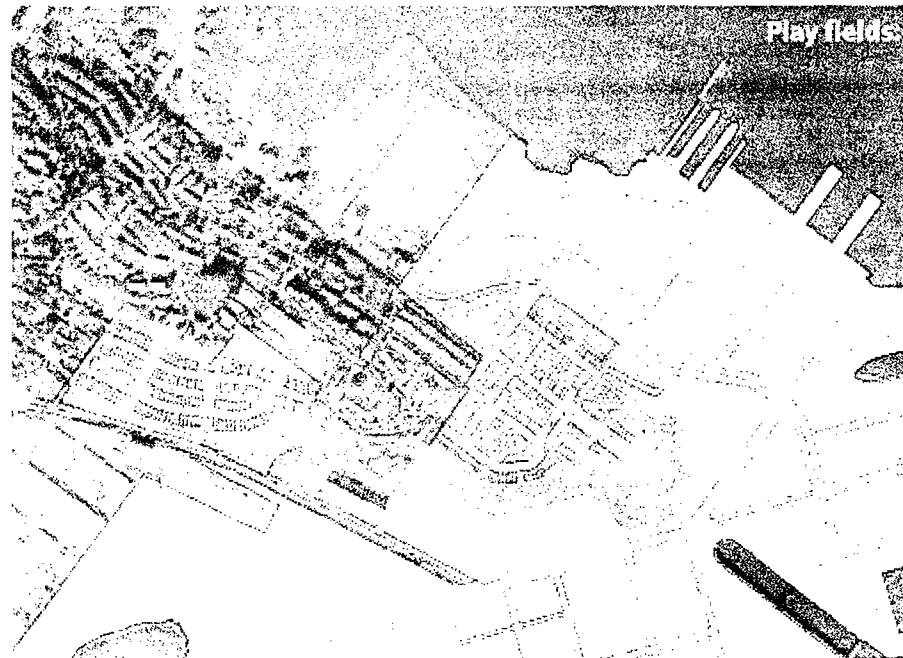
GARDENS



YARDS

-Flexible sport fields located
on market place area

-Tot-lots in the hilltop and
the hillside neighborhoods



: recreation, sport games, children-parents interaction and play,
special events



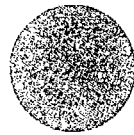
BLUFF



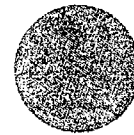
PARKS



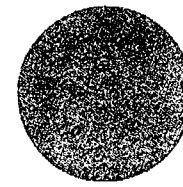
PLAZAS



**PLAY
FIELDS**



STREETS



GARDENS



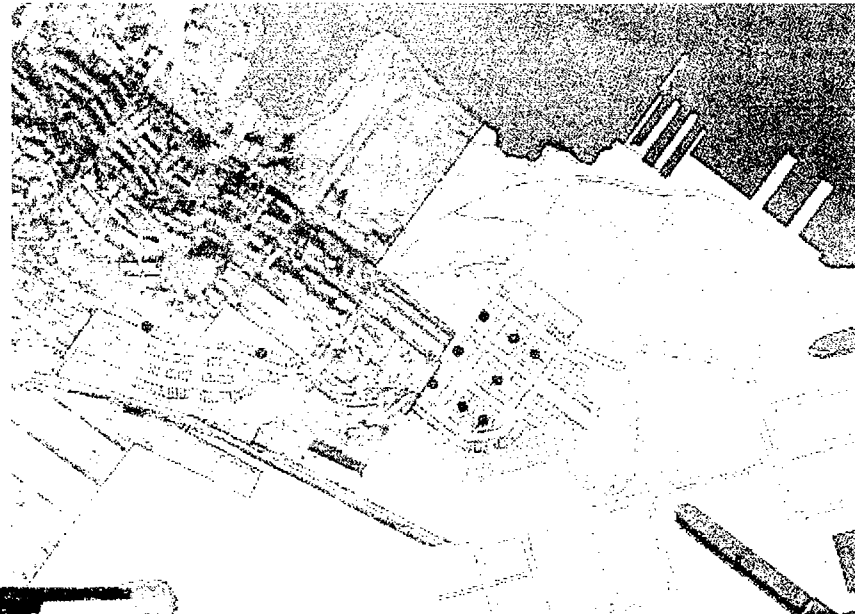
YARDS

Ornamental gardens

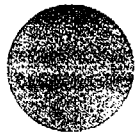
- Buffer areas
- Well manicured, planted with flowers, ornamental plants, trees
- Maintained by Homeowner Assoc. and non profit groups
- Semi-enclosed by gates, related to building types
- Semi-private, neighborhood based

Community gardens

- Planted and maintained by community.
- Enclosed by walls or fences.
- Furnished with seating areas
- Semi-public



Passive recreation, buffer areas, gardening, socializing, special community events



BLUFF



PARKS



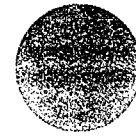
PLAZAS



**PLAY
FIELDS**



STREETS



GARDENS



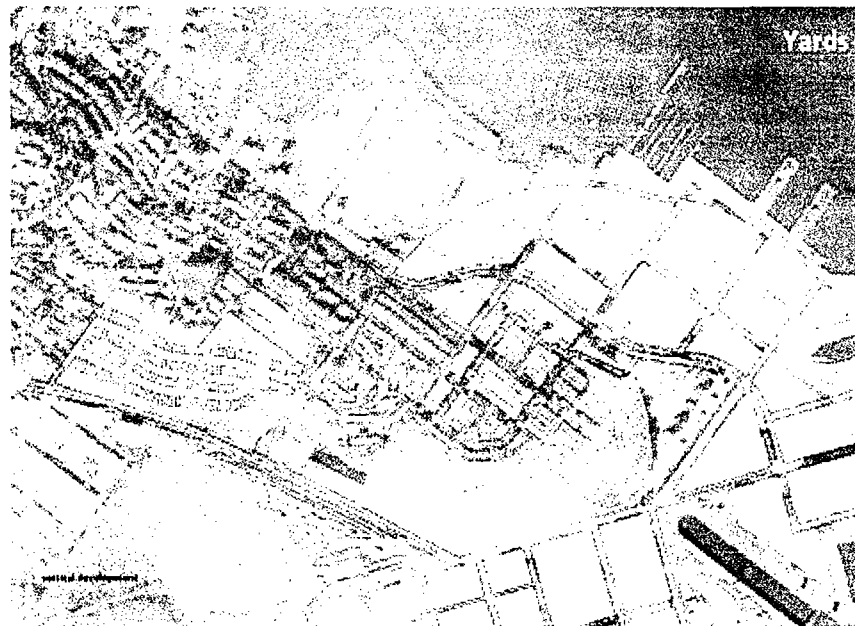
YARDS

-Outdoor spaces maintained
by residents

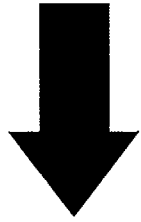
-Lushly planted with
ornamental and edible plants

-Furnished with stoops and
seating areas

-Semi- enclosed
by walls or fences

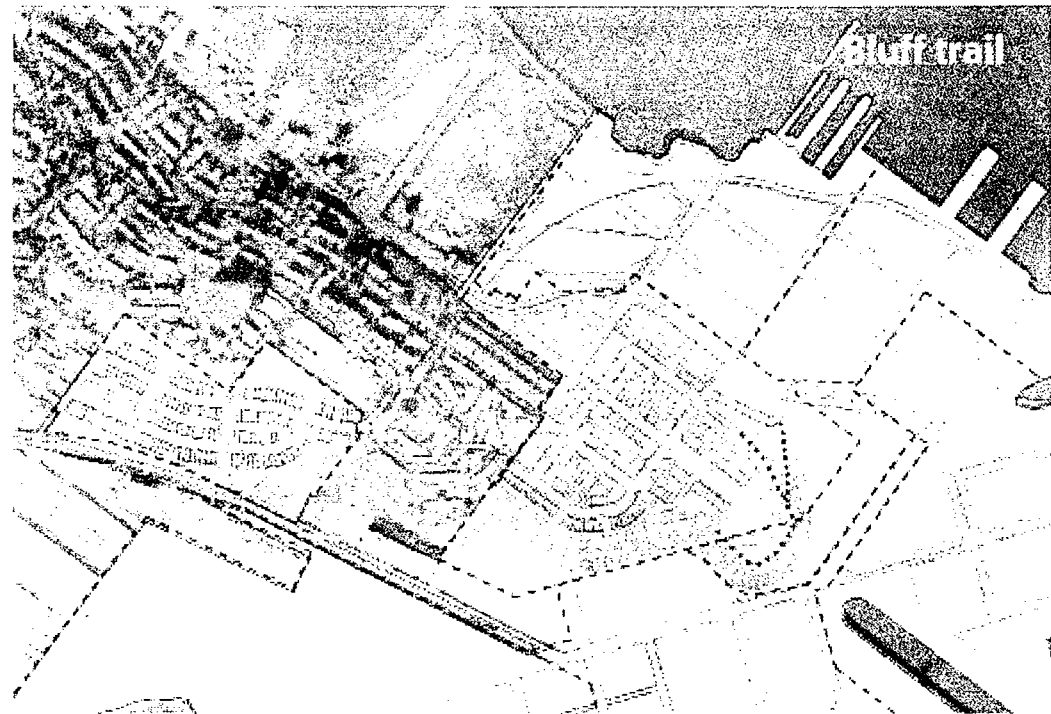


:gardening, small socializing, relaxing, domestic activities



BLUFF TRAIL PROMENADE

- Regional trail
- Dirt trail organized in a loop around the hilltop
- Surrounded by "natural" native vegetation (scrub or chaparral)
- Connected to Hilltop park and streets by stairways

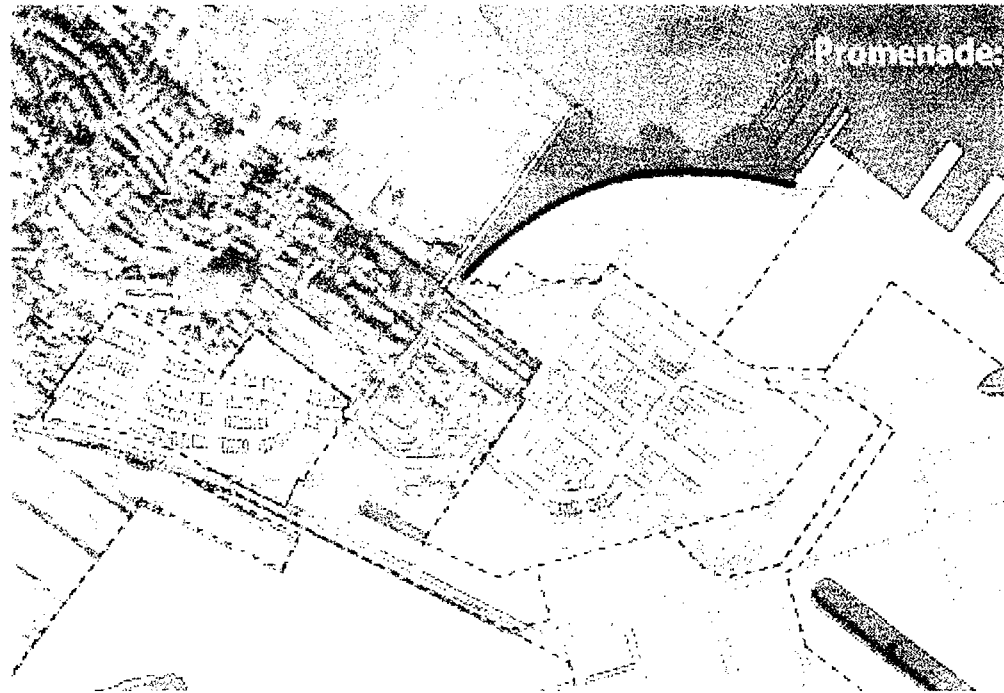


Enjoying views, walking, jogging, hiking

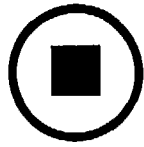


BLUFF TRAIL PROMENADE

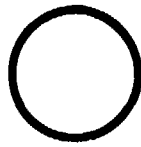
- Paved path integral part of the waterfront park area.
- Connecting interpretive elements within the CHRP program such as shoreline markers, historic points and memorial groves.
- Attracting regional users as a natural and cultural destination.



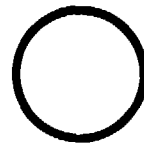
: bicycle riding, rollerblading, jogging, strolling, walking



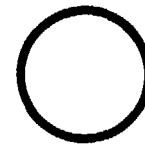
overlooks



stairways



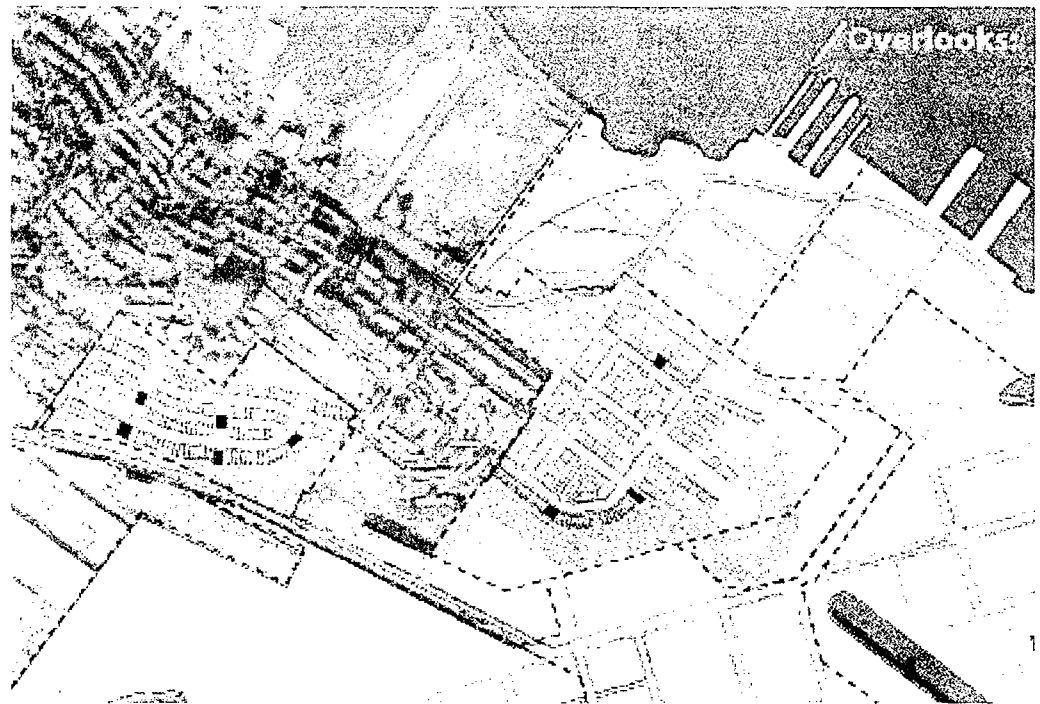
facilities



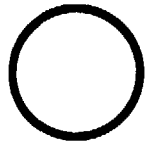
CHRP features

Flat paved and soft areas surrounded by native vegetation offering special views of the bay.

Opportunities for interpretive art and signage within the CHRP program.



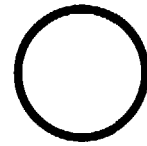
: vista points, resting, enjoying the views



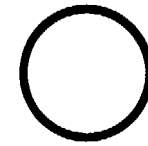
overlooks



stairways



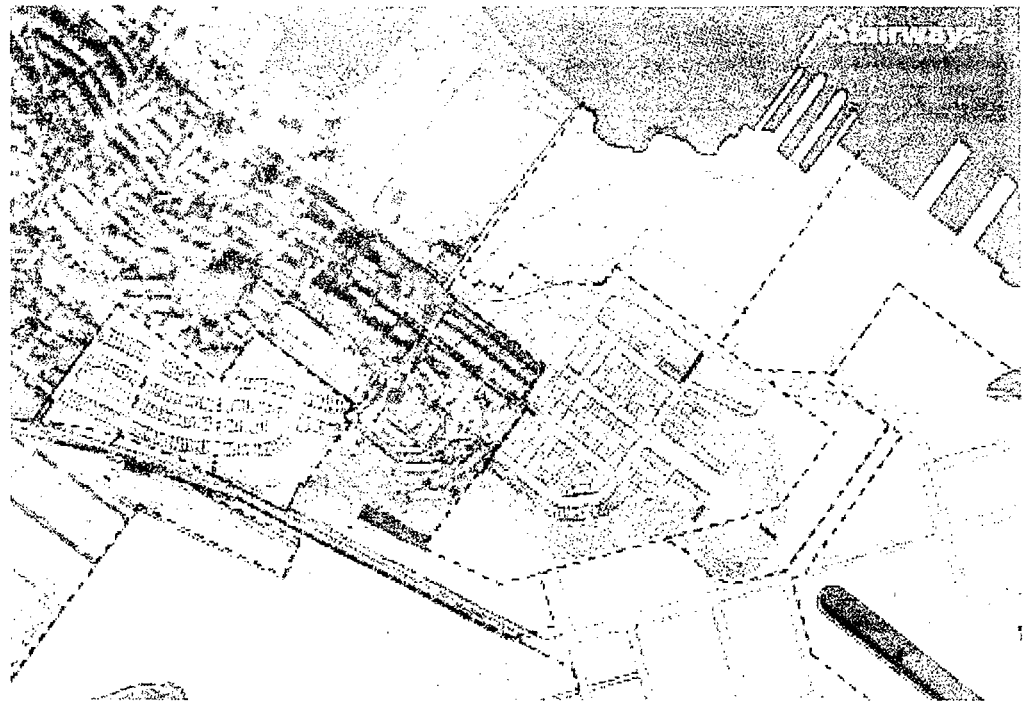
facilities



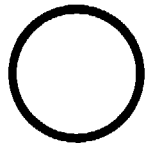
CHRP features

Planted at edges.

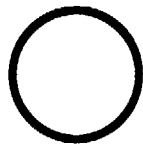
Opportunities for
interpretive signage
and art within the
CHRP program.



: pedestrian circulation, hiking, walking, enjoying the views



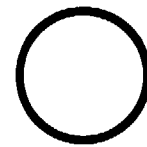
overlooks



stairways

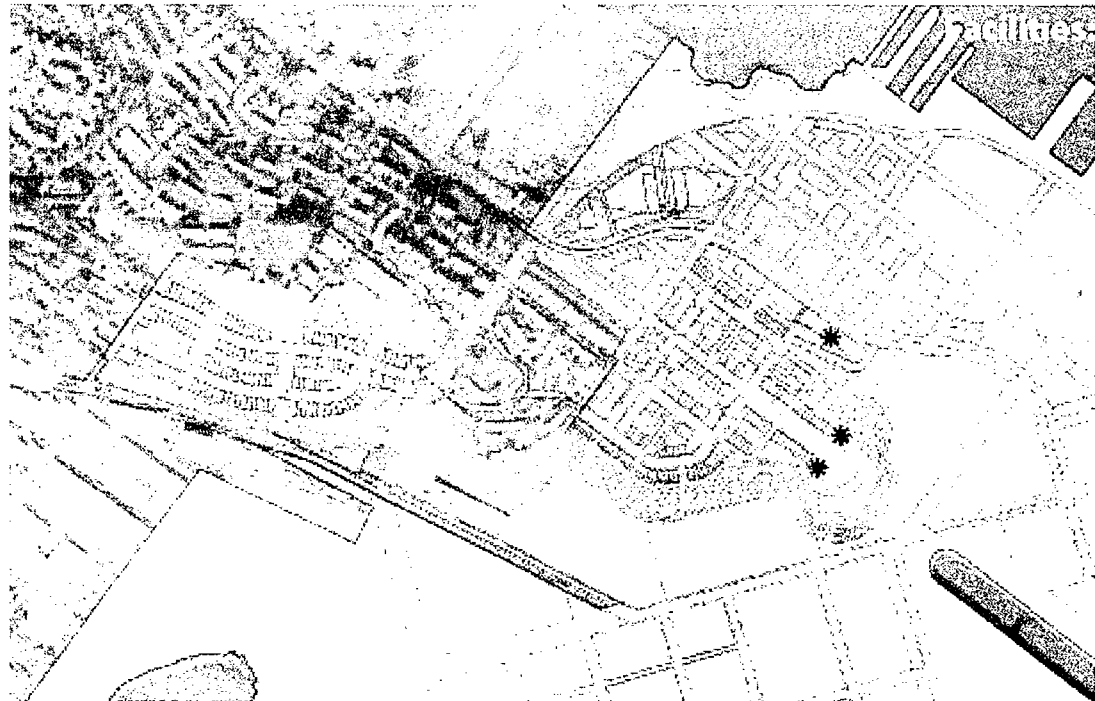


facilities



CHRP features

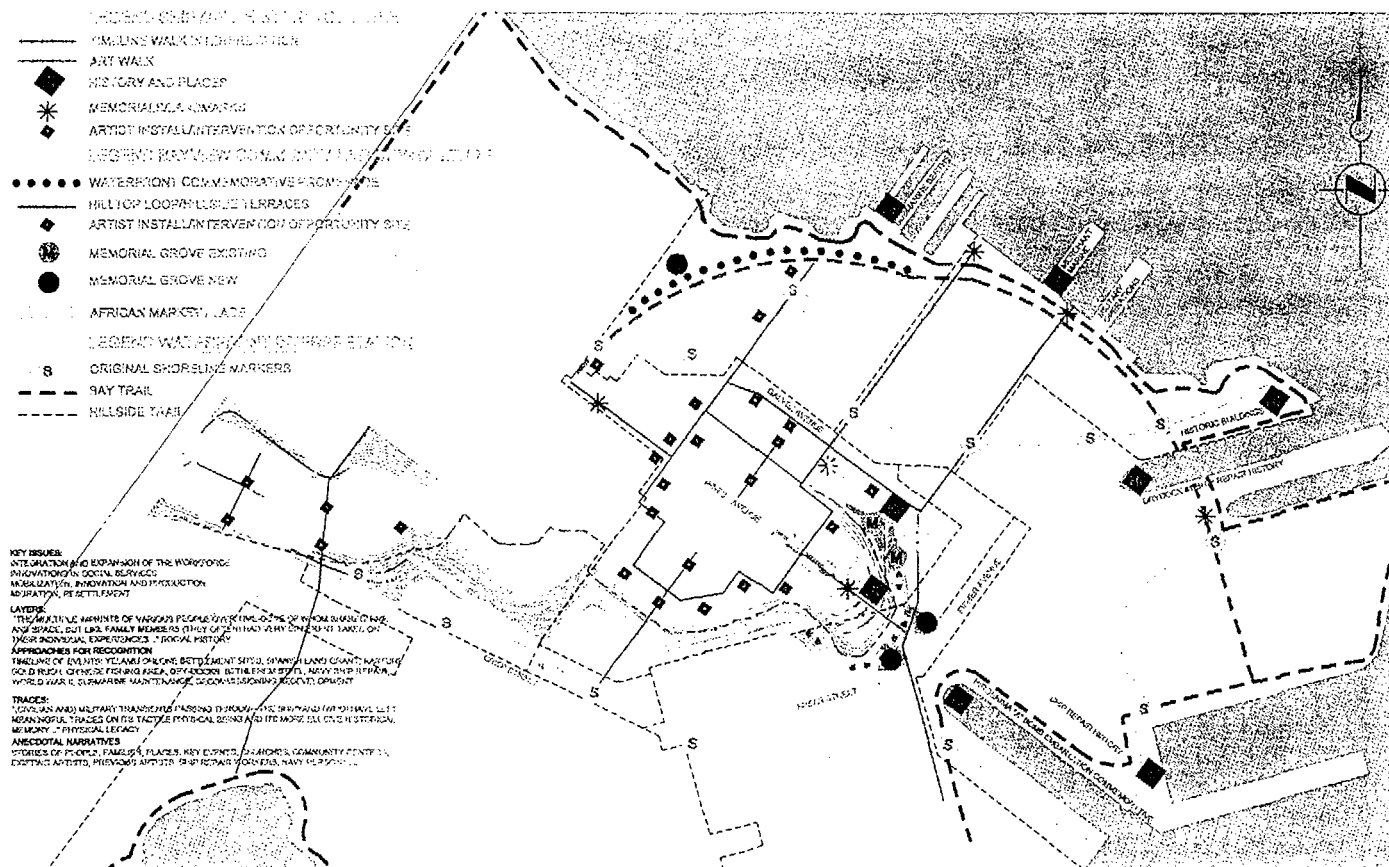
Structures offering
services to the
community: market place
and performance spaces.



: shopping, information points, education, historical interpretation



Installations celebrating
the shipyard's history



: learning the history and culture of the shipyard

Hunters Point Shipyard Phase One OPEN SPACE PLAN PARCEL A'

Legend

plaza	terrace	foot path
park	stairs	walkway path
play	facilities	monuments
sport fields foot ball	market place kiosk	new street street
garden	promenade	main neighbourhood street
void		primary street
		panel boundary

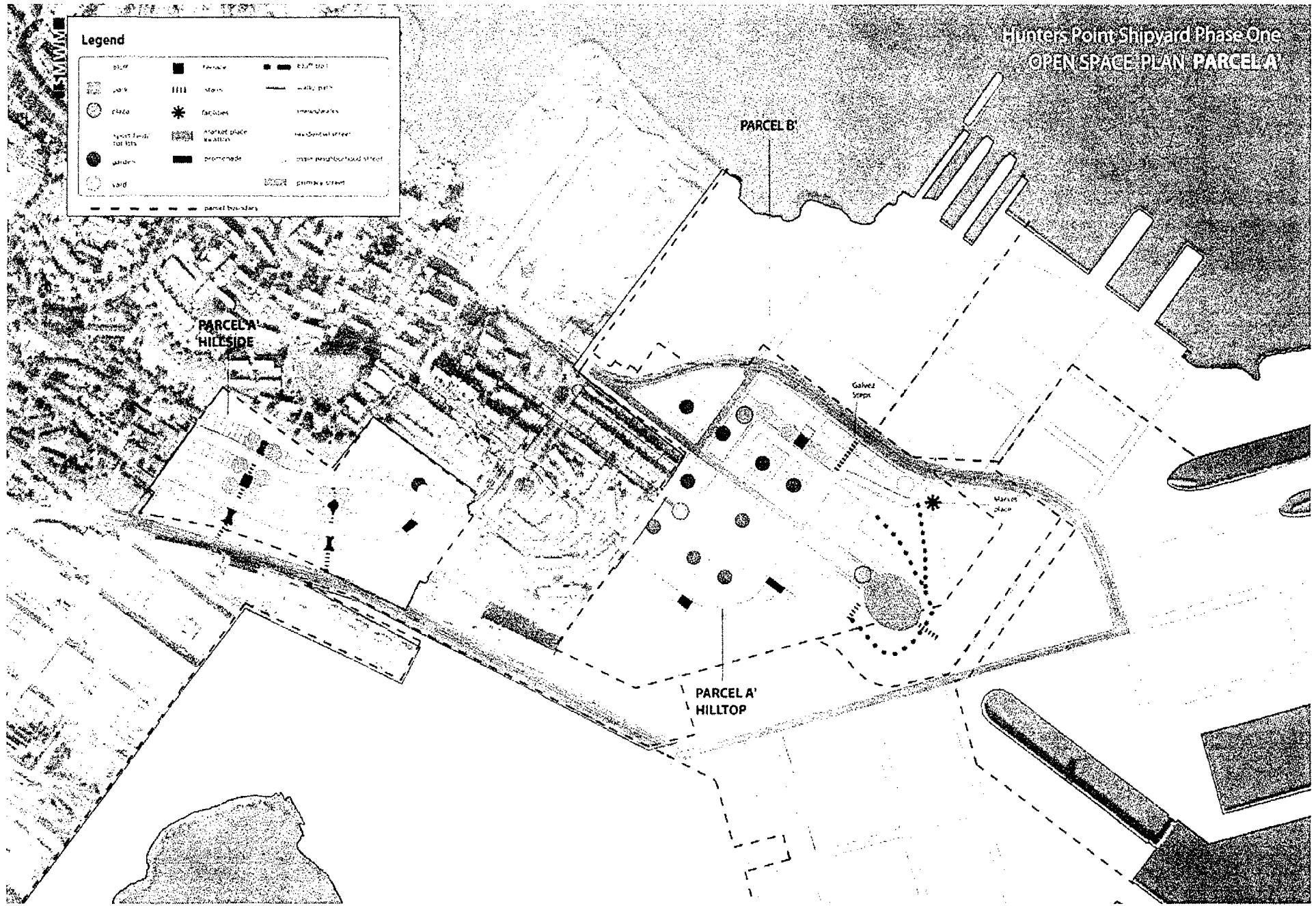
PARCEL B'

PARCEL A'
HILLSIDE

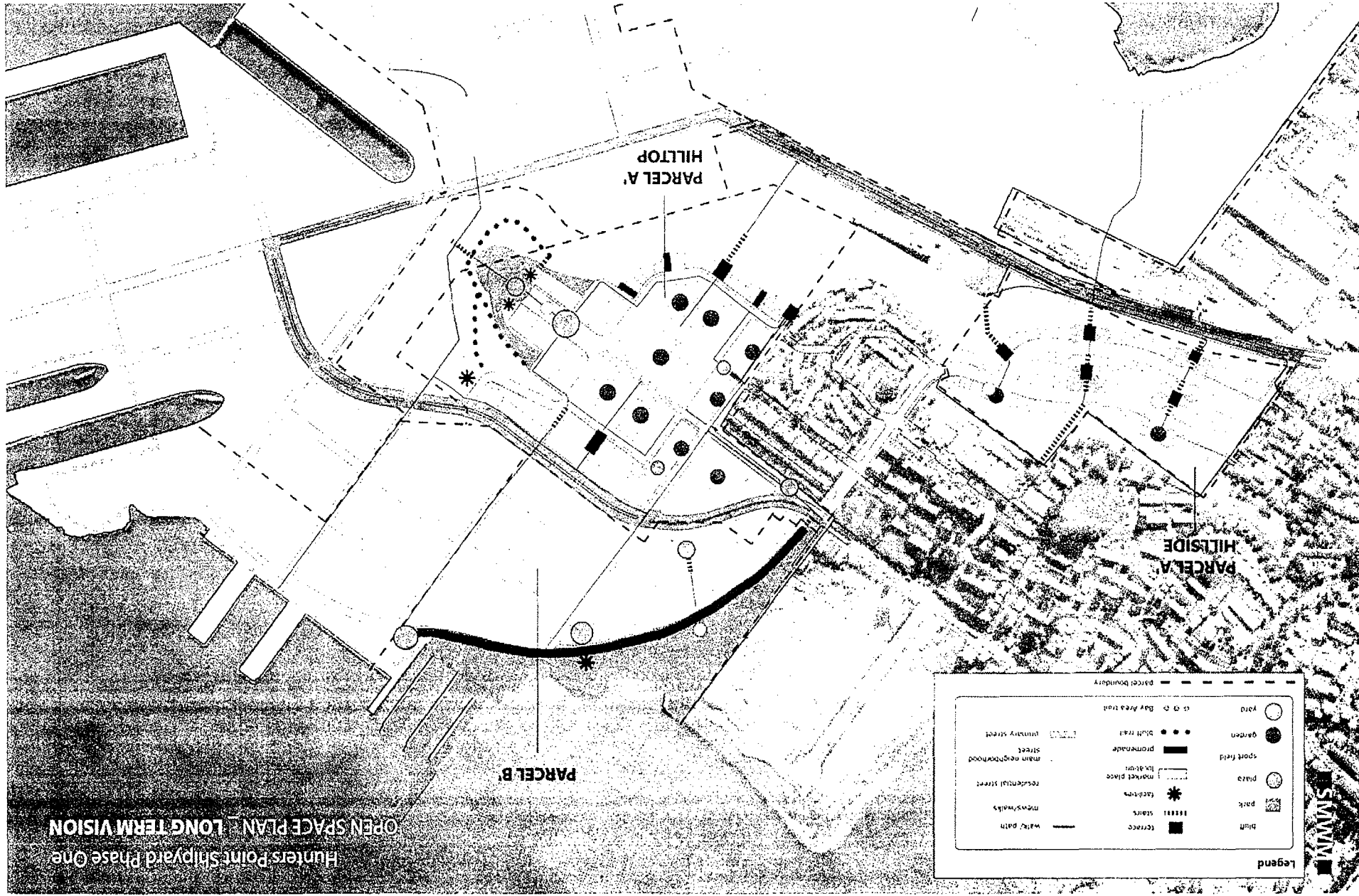
PARCEL A'
HILLTOP

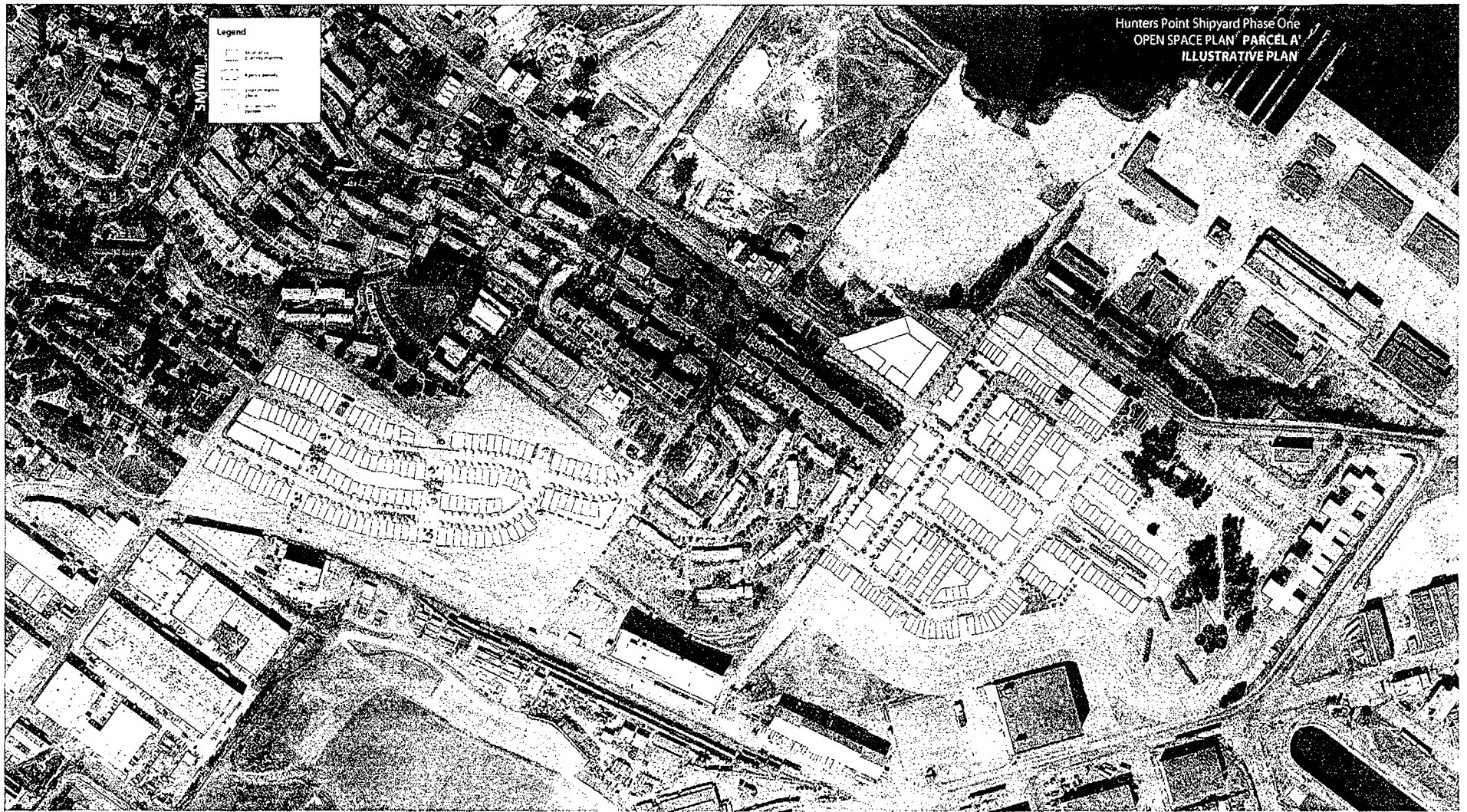
Galvez
Steps

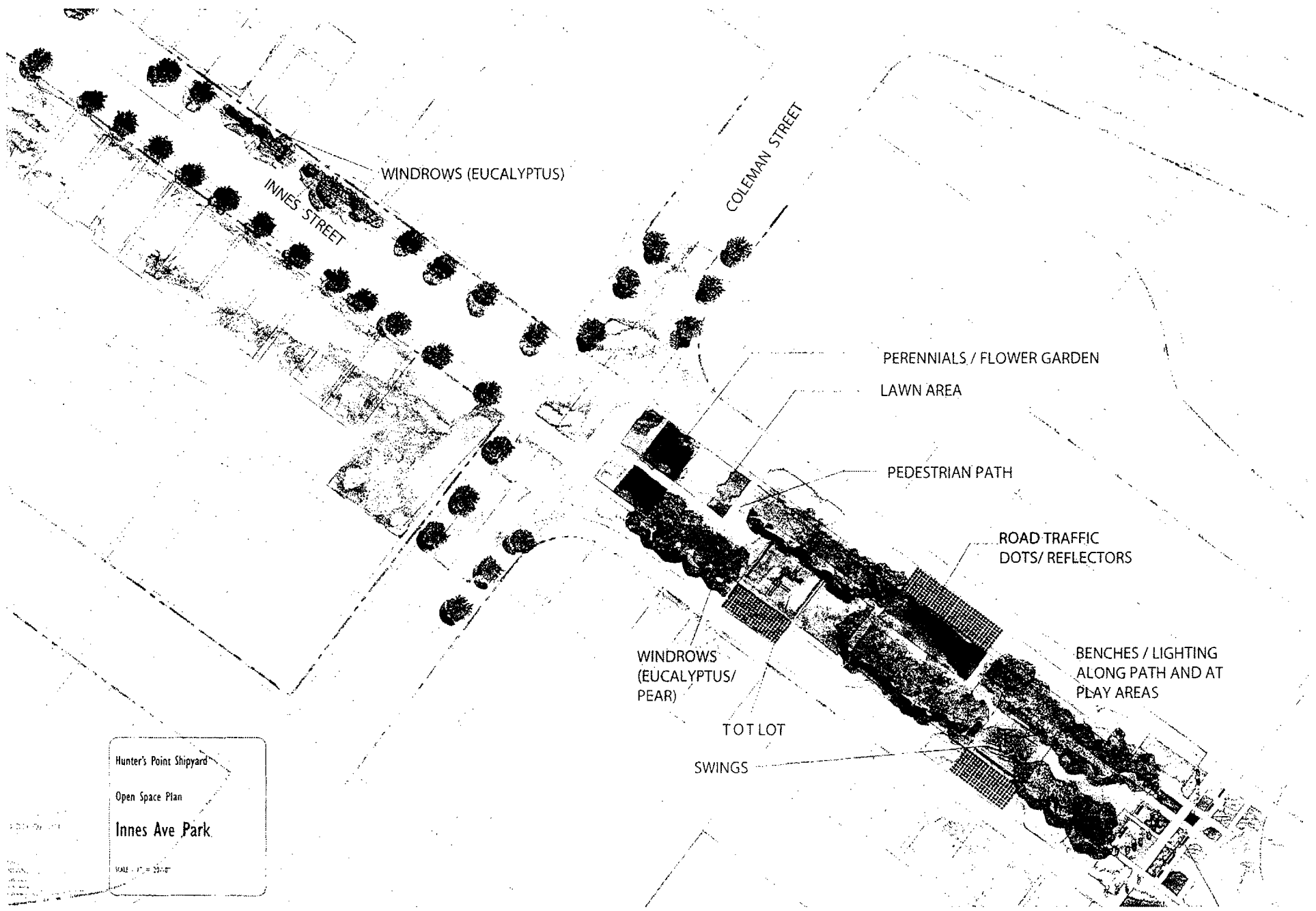
Market
place



Hunters Point Shipyard Phase One OPEN SPACE PLAN - LONG TERM VISION





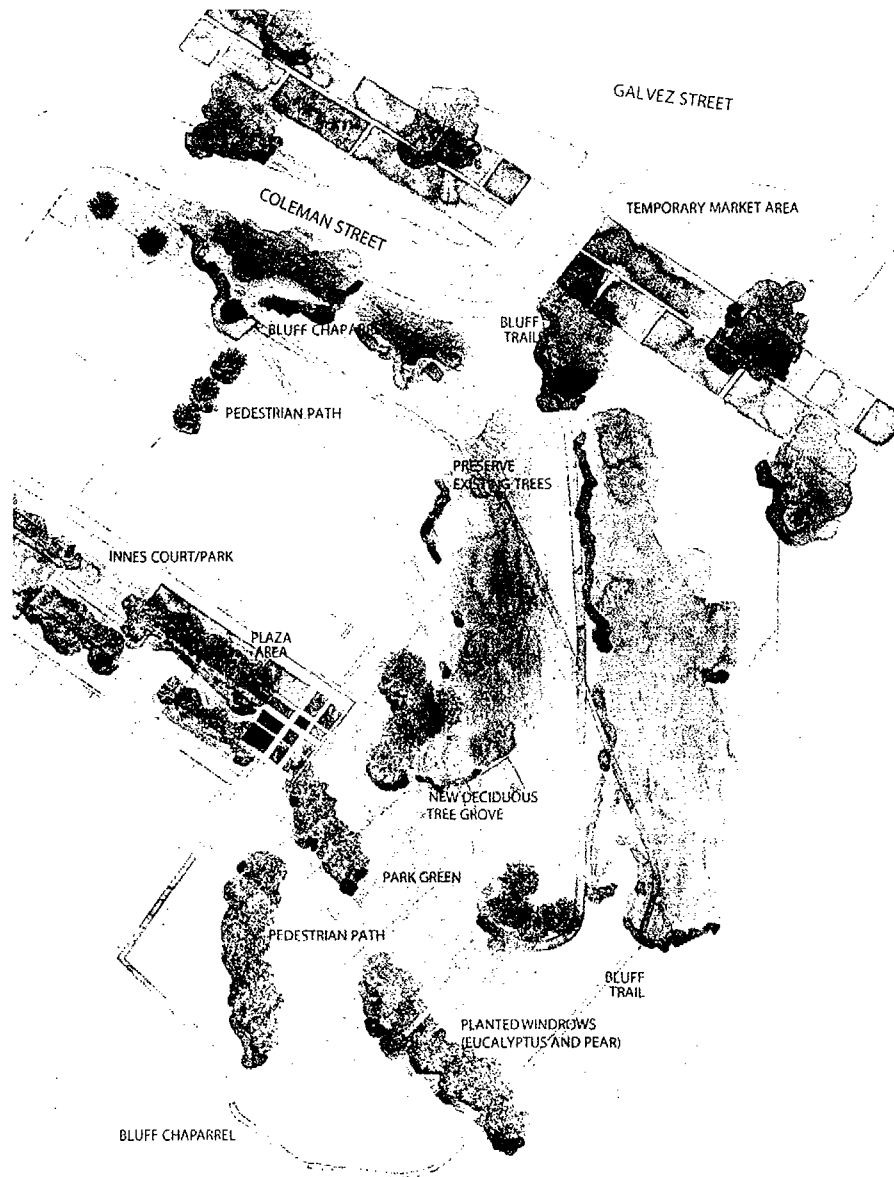


Hunter's Point Shipyard

Open Space Plan

Innes Ave Park

SCALE - 1" = 25'-0"

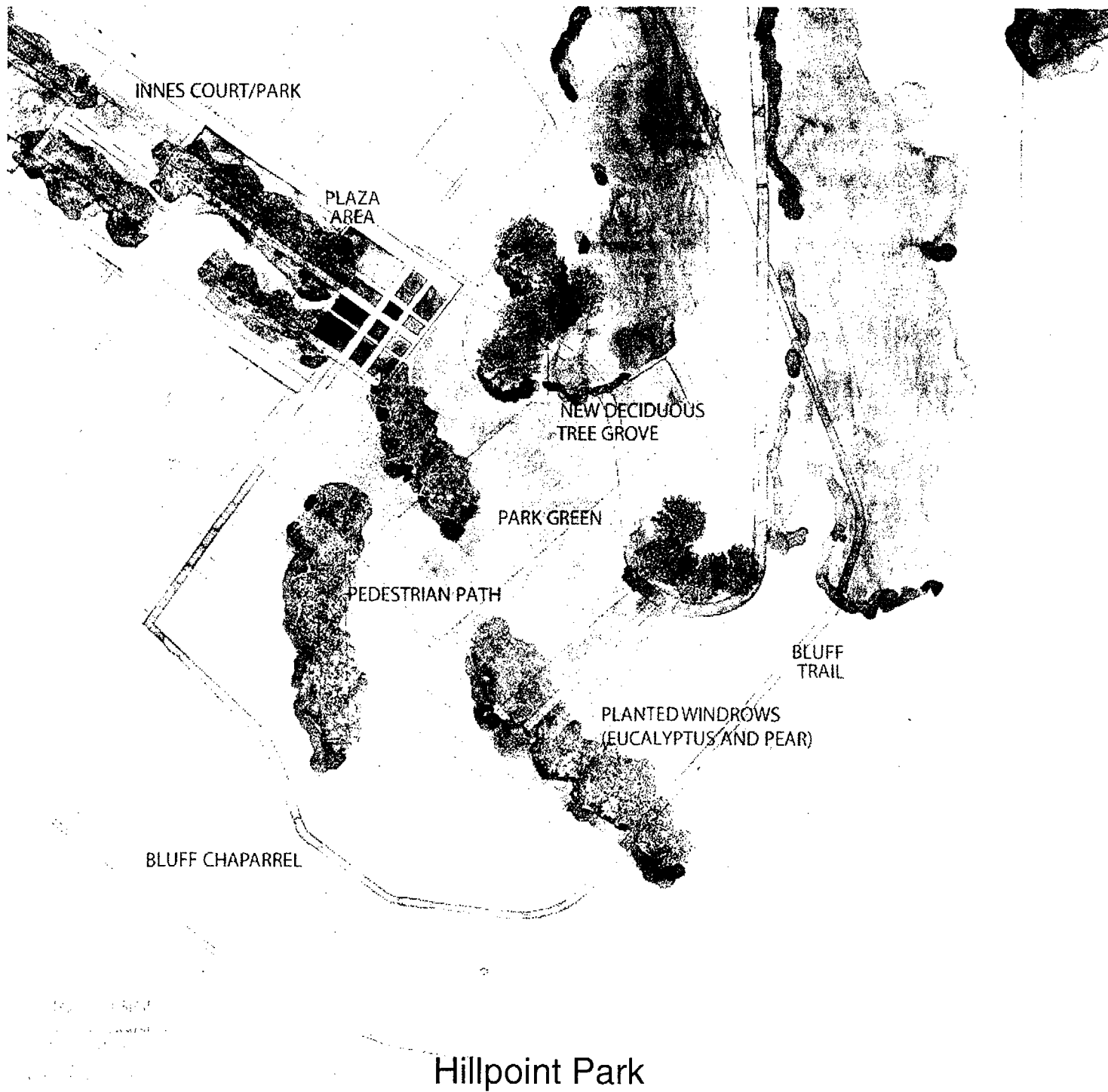


Hunter's Point Shipyard

Open Space Plan

Hill Top Park

SCALE 1" = 40' 0"

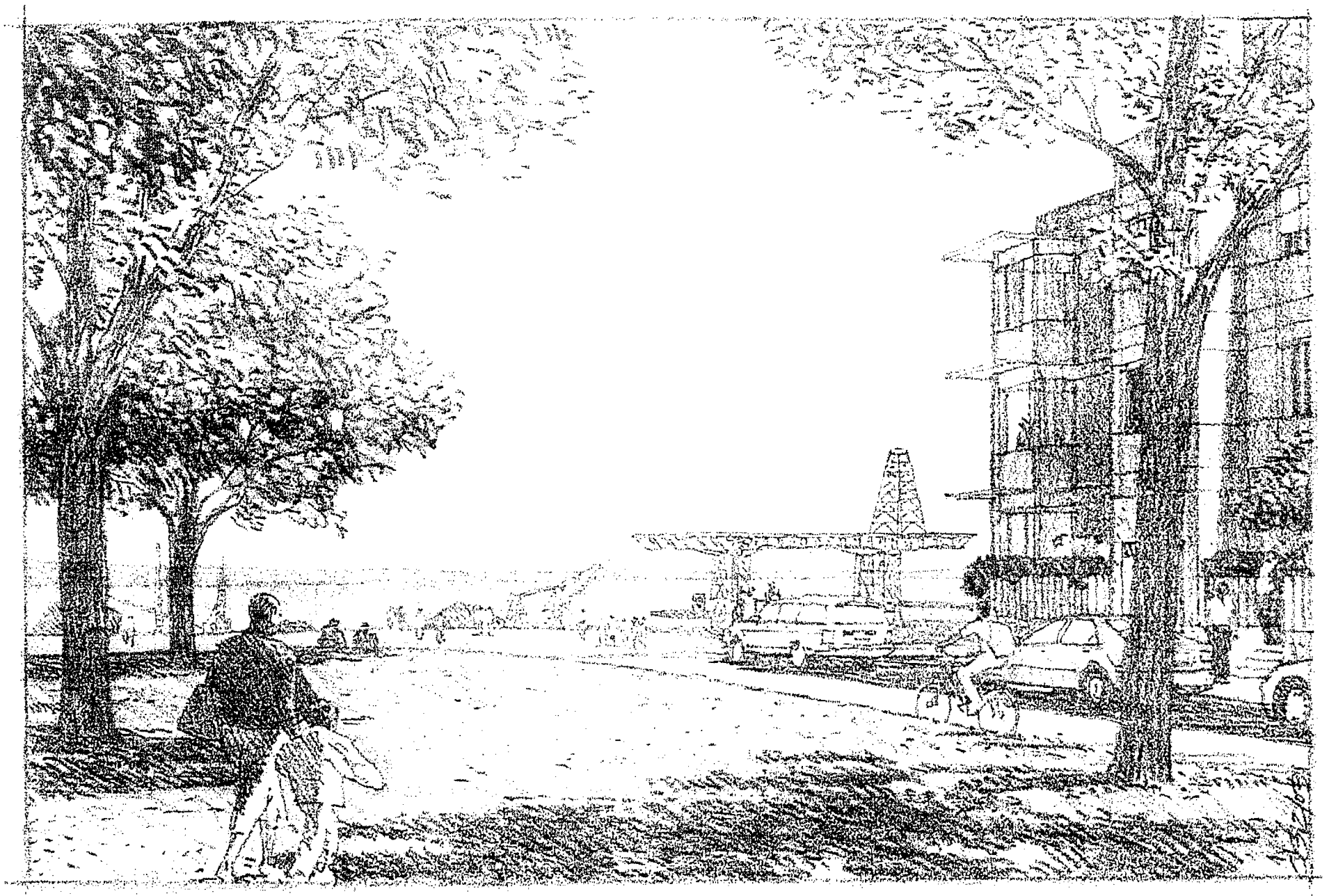


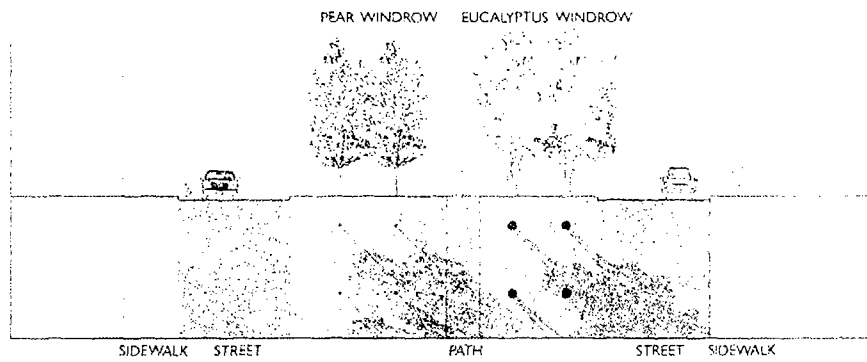
Hunter's Point Shipyard

Open Space Plan

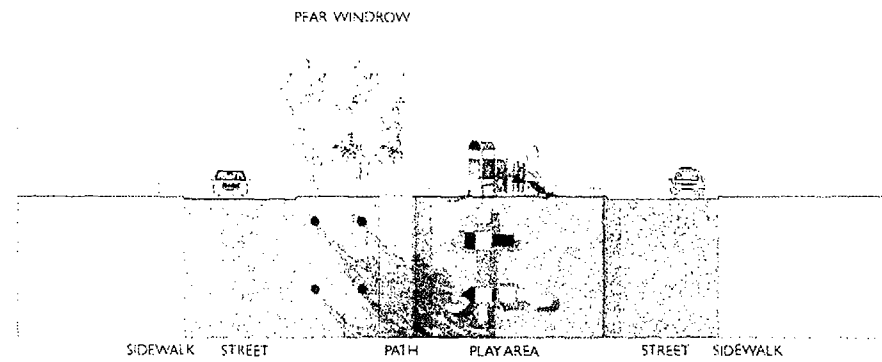
Hill Top Park

SCALE 1" = 50' 0"





Innes Street Section A



Innes Street Section B



Hilltop Park Section

TREE BOSQUE
STAIRS AND
GREEN WALLS
INTERSECTION
TREATMENT
(PAINTED LINES/
SCORED PAVING)

TREES IN SIDEWALK
TREE PLANTING STRIP
JERROLD AVENUE

INTERSECTION TREATMENT
(PAINTED LINES / SCORED PAVING)

SEATING AREA
LAWN AREAS

SHRUB PERENNIAL GARDEN

WALL WITH
RAILINGS

CONTINUOUS
TREE PLANTING
AT OVERLOOK

Hunter's Point Shipyard

Open Space Plan

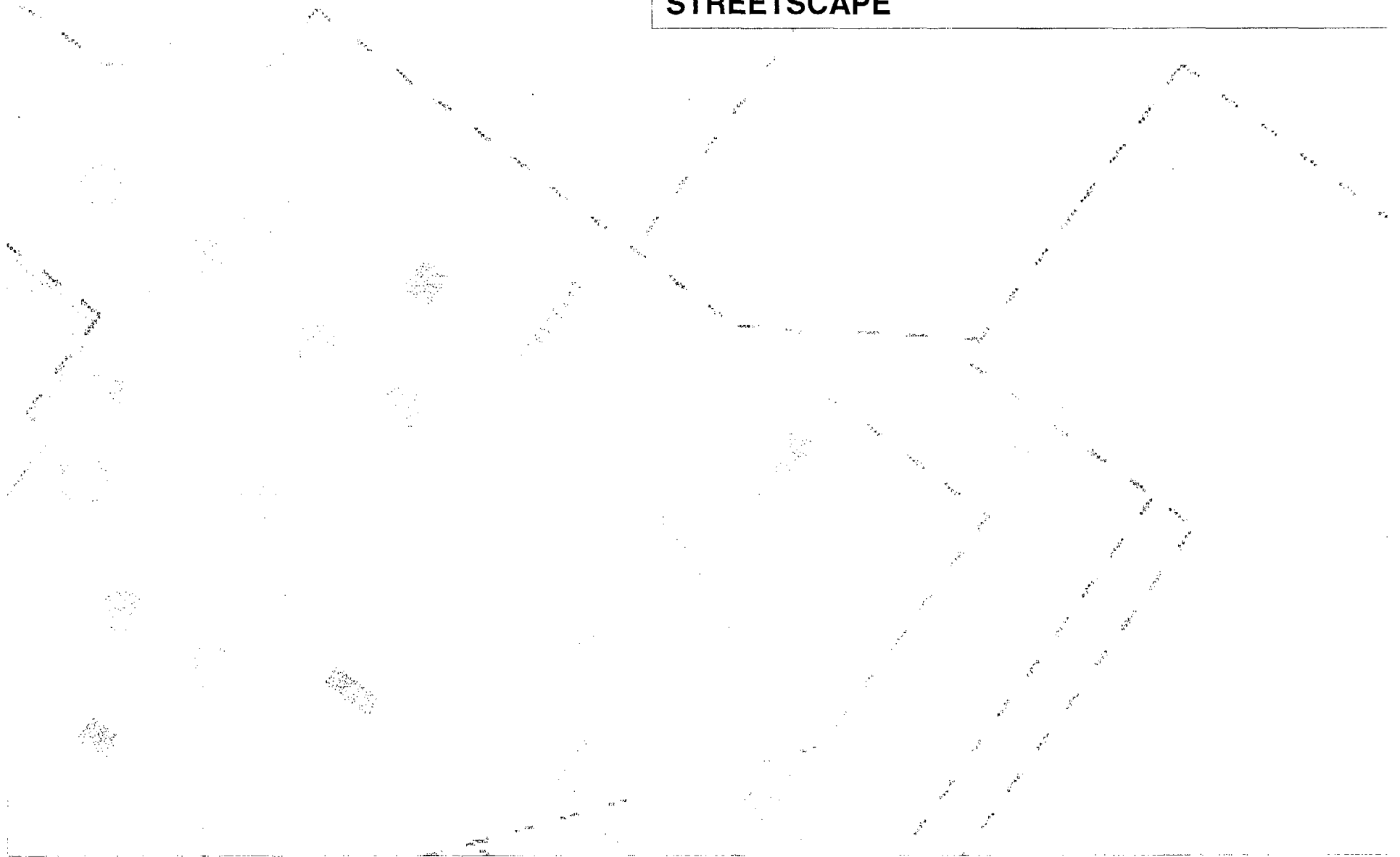
Jerrold Ave Courts

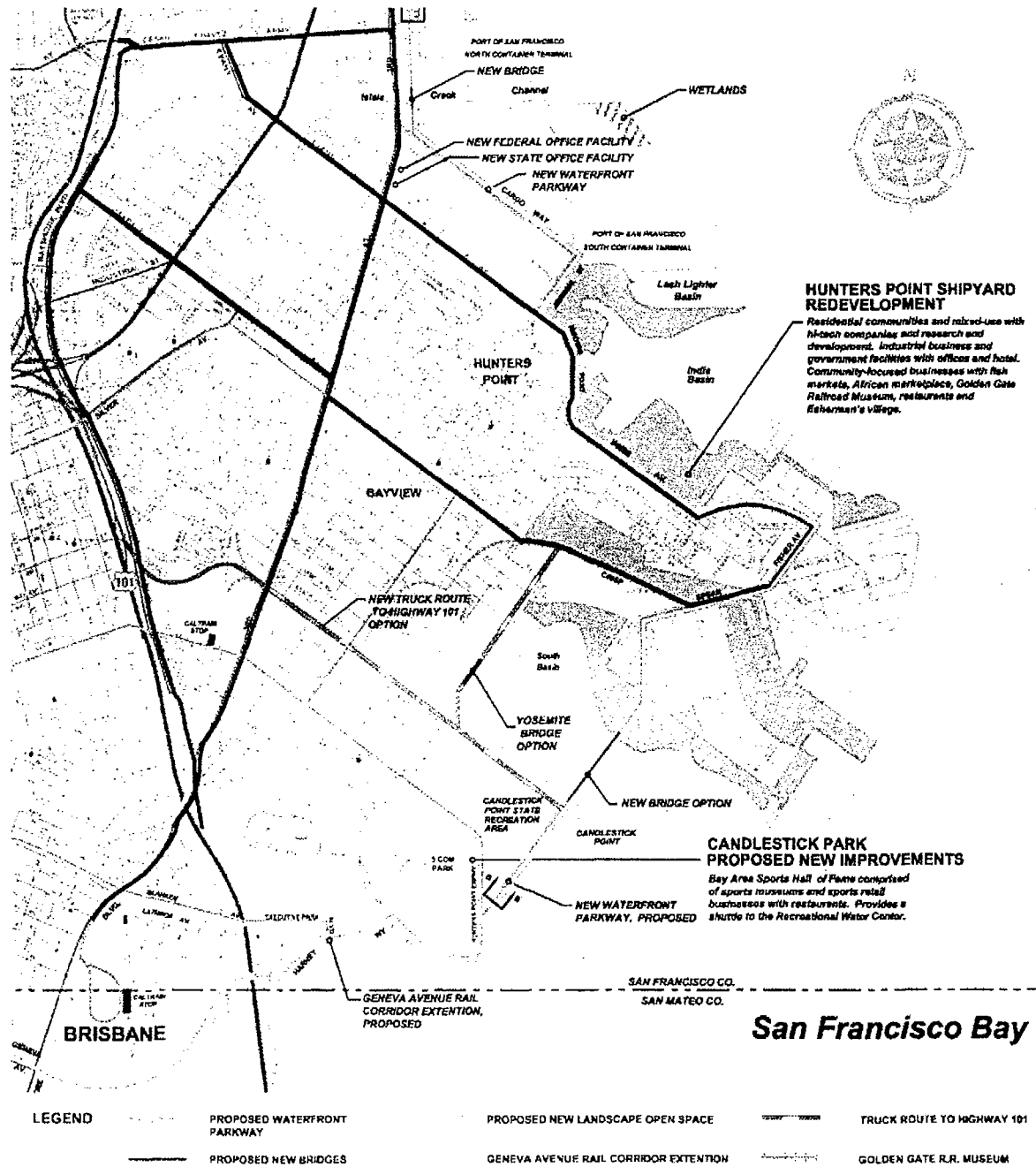
SCALE - 1" = 33'-0"

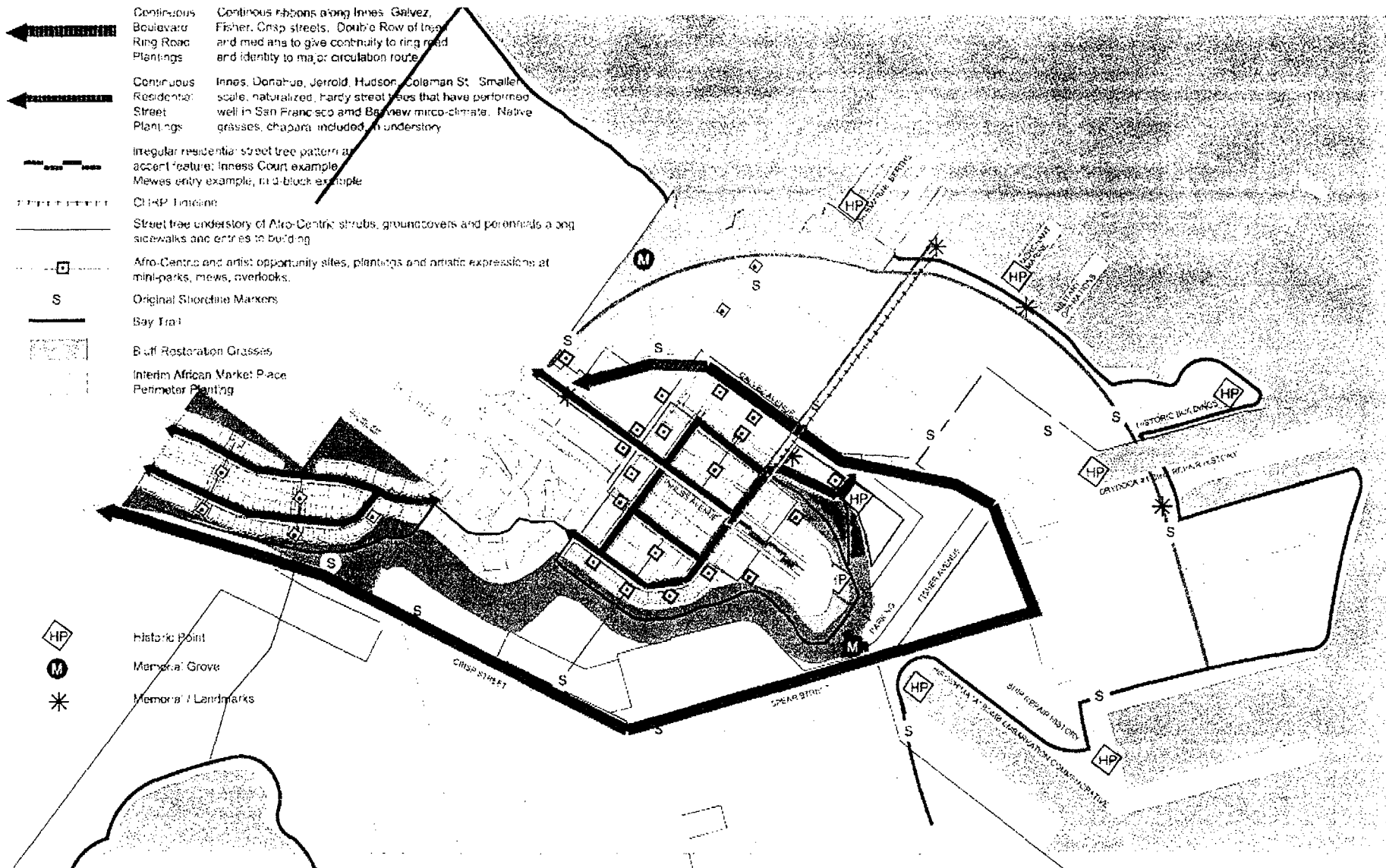
Hunters Point Shipyard - Phase 1

Open Space Plan

STREETSCAPE







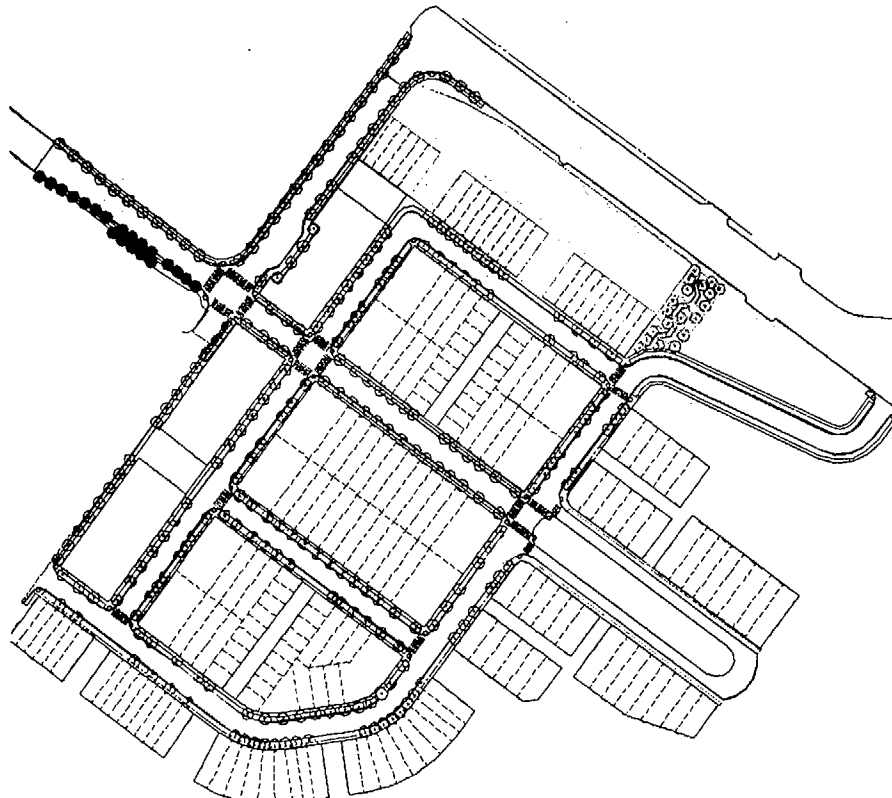
TREE COMMON & LATIN NAMES	SYMBOL	IMAGES
<p><i>Celtis occidentalis</i> Common Hackberry</p> <p>Gabriel Avenue Street</p> <p>Deciduous Grows to 30' Attractive to birds Park tree Quantity 6</p>		
<p><i>Parthenocladus floribunda</i> Red-flowering Dogwood</p> <p>Irving Street</p> <p>Deciduous Grows to 40' Quantity 15</p>		
<p><i>Fraxinus americana</i> 'Waywood' Regimental Ash</p> <p>Colonial Street</p> <p>Deciduous Grows to 35' Drought tolerant Easy to plant Quantity 18</p>		
<p><i>Quercus macrocarpa</i> 'Stansbury' Stansbury Oak</p> <p>Hudson Avenue</p> <p>Deciduous Grows to 30' Attractive to birds Narrow to dense Quantity 22</p>		

Street Tree Planting:

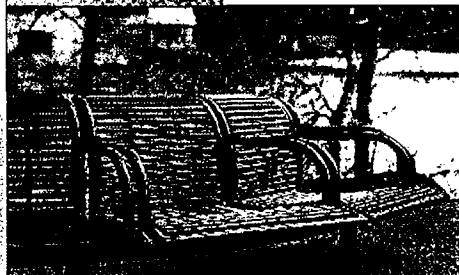
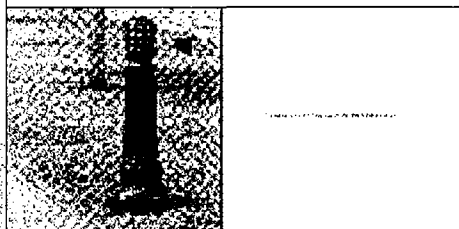
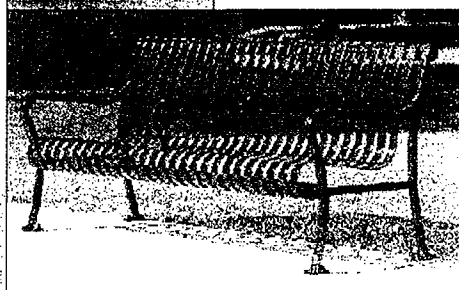
- Definition & Planting: Identity for Each Street
- Upward Branching, Medium Size, Oval Shape Crown
- Deciduous with Seasonal Change (Except Victorian Box Tree)
- Low Maintenance
- Drought Tolerance
- Gateway Element
- Green Ribbon Planting



Composite Illustration of General Character of the Streetscape Including Lighting and Street Furniture.



IMAGES	SYMBOL	TREE COMMON & LATIN NAMES
		<p><i>Platanus occidentalis</i> Weeping Elm</p> <p>Jefferson Avenue</p> <p>Deciduous Grows to 40' Dense-shaped Flowers in early spring Quantity 32</p>
		<p><i>Platanus occidentalis</i> 'Weeping' Weeping Elm</p> <p>Dorchester Street</p> <p>Deciduous Grows to 40' Lateral leaves are 4-10" wide Can be trained to create canopy, low canopy Quantity 48</p>
		<p><i>Prunella americana</i> 'Vanderbilt' Purple Leaf Plum</p> <p>Proctor Street</p> <p>Deciduous Grows to 30' Dark purple leaves Flowers are light pink Quantity 51</p>
		<p><i>Prunella americana</i> 'Chardonnay' Chardonnay Plum</p> <p>Irving Avenue</p> <p>Deciduous Grows to 30' Pinkish color leaves White flowers in spring Quantity 43</p>



Site Furnishings:

- Safe, convenient and aesthetically pleasing pedestrian environment.
- Two trash receptacles per intersection.
- Benches with backs and arm-rests.
- One bicycle rack per street.
- MUNI Bus Shelter and Info Kiosk.

Lighting:

- Pole mounted lights 30 feet in height and spaced as 125 foot intervals
- Neighborhood street fixtures will be 15 feet high and spaced at 100 foot alternating centers.
- The standard steel strain pole as required by MUNI

CHRP GRAPHICS AND MEDALLIONS, BANNERS MOUNTED ONTO STREET FURNITURE

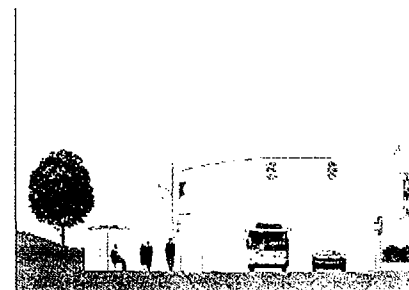
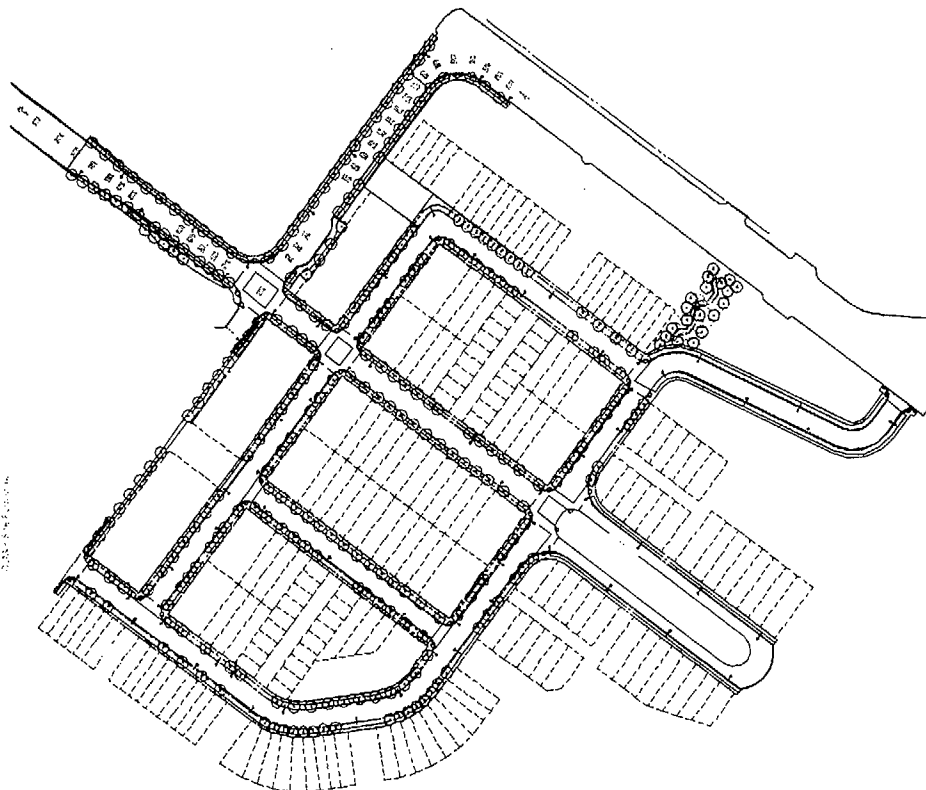


Illustration of a bus shelter at night.



Illustration of a bus shelter at night.

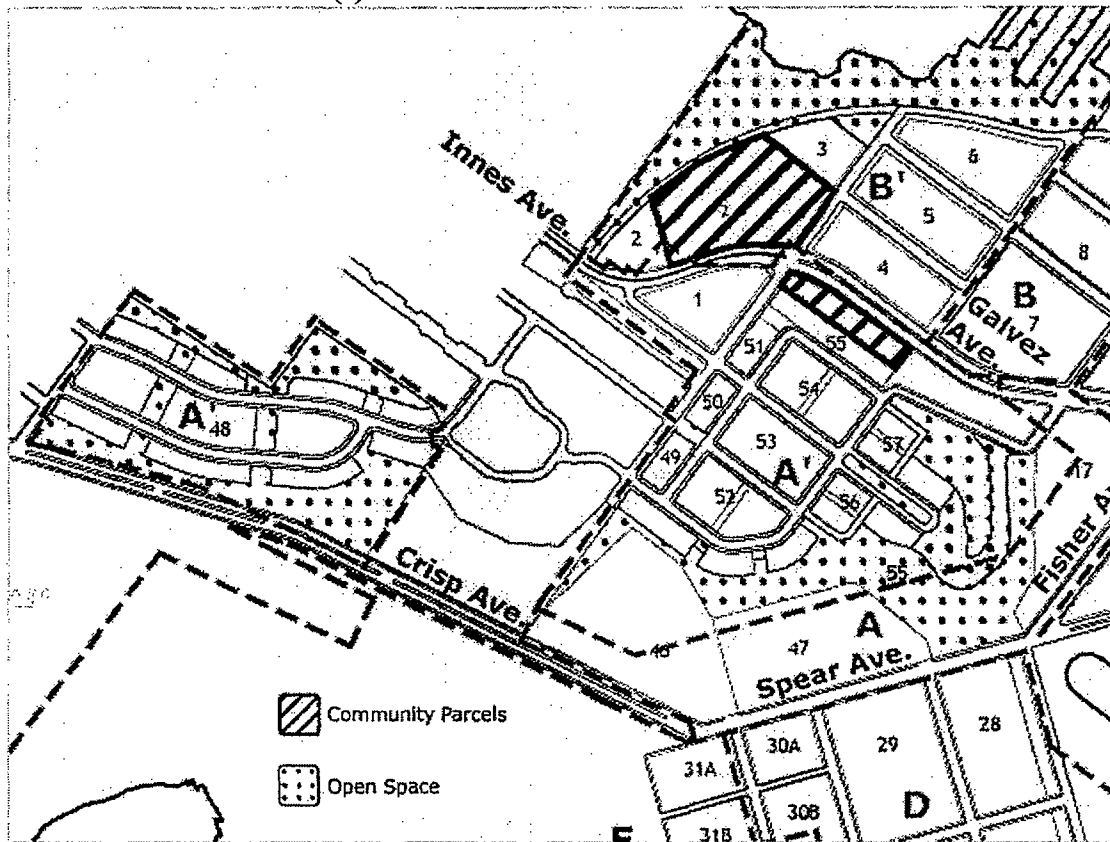
Symbol	CHRP GRAPHICS AND MEDALLIONS
	Neighborhood street fixtures
	Open spaces, lighting
	Bus shelter, information kiosk
	Open spaces, lighting

HUNTERS POINT SHIPYARD

DDA Closing Condition 11(b)

LOCATION AND RANGE OF USES FOR COMMUNITY FACILITIES PARCELS

1. Location of Parcel(s)



Note: The exact location of the approximately 4.8-acre Community Facilities Parcel on Parcel B' (shown above on Block 2) may be refined as Phase 1 is implemented to avoid undue delays. Additionally, it is the Agency's intention to reserve additional land for Community Facilities in future phases as such land becomes available.

2. Range of Uses

The Agency, in consultation with the CAC, will determine the ultimate uses for the Community Facilities Parcels.

Appropriate uses for the site include, but are not limited to, the following:

- job training facilities,
- educational facilities,
- cultural and arts facilities,
- community center,
- recreational facility,
- other facility beneficial to the BVHP community



Landfill Gas Primer

An Overview for Environmental Health Professionals

Chapter 2: Landfill Gas Basics

This chapter provides basic information about landfill gas—what it is composed of, how it is produced, and the conditions that affect its production. It also provides information about how landfill gas moves and travels away from the landfill site. Finally, the chapter presents an overview of the types of landfills that might be present in your community and the regulatory requirements that apply to each.

What is landfill gas composed of?

Landfill gas is composed of a mixture of hundreds of different gases. By volume, landfill gas typically contains 45% to 60% methane and 40% to 60% carbon dioxide. Landfill gas also includes small amounts of nitrogen, oxygen, ammonia, sulfides, hydrogen, carbon monoxide, and nonmethane organic compounds (NMOCs) such as trichloroethylene, benzene, and vinyl chloride. Table 2-1 lists “typical” landfill gases, their percent by volume, and their characteristics.

How is landfill gas produced?

Three processes—bacterial decomposition, volatilization, and chemical reactions—form landfill gas.

- **Bacterial decomposition.** Most landfill gas is produced by bacterial decomposition, which occurs when organic waste is broken down by bacteria naturally present in the waste and in the soil used to cover the landfill. Organic wastes include food, garden waste, street sweepings, textiles, and wood and paper products. Bacteria decompose organic waste in four phases, and the composition of the gas changes during each phase. The box below provides detailed information about the four phases of bacterial decomposition and the gases produced during each phase. Figure 2-1 shows gas production at each of the four stages.
- **Volatilization.** Landfill gases can be created when certain wastes, particularly organic compounds, change from a liquid or a solid into a vapor. This process is known as volatilization. NMOCs in landfill gas may be the result of volatilization of certain chemicals disposed of in the landfill.
- **Chemical reactions.** Landfill gas, including NMOCs, can be created by the reactions of certain chemicals present in waste. For example, if chlorine bleach and ammonia come in contact with each other within the landfill, a harmful gas is produced.

Table 2-1: Typical Landfill Gas Components

Component	Percent by Volume	Characteristics

methane	45–60	Methane is a naturally occurring gas. It is colorless and odorless. Landfills are the single largest source of U.S. man-made methane emissions
carbon dioxide	40–60	Carbon dioxide is naturally found at small concentrations in the atmosphere (0.03%). It is colorless, odorless, and slightly acidic.
nitrogen	2–5	Nitrogen comprises approximately 79% of the atmosphere. It is odorless, tasteless, and colorless.
oxygen	0.1–1	Oxygen comprises approximately 21% of the atmosphere. It is odorless, tasteless, and colorless.
ammonia	0.1–1	Ammonia is a colorless gas with a pungent odor.
NMOCs (non-methane organic compounds)	0.01–0.6	NMOCs are organic compounds (i.e., compounds that contain carbon). (Methane is an organic compound but is not considered an NMOC.) NMOCs may occur naturally or be formed by synthetic chemical processes. NMOCs most commonly found in landfills include acrylonitrile, benzene, 1,1-dichloroethane, 1,2-cis dichloroethylene, dichloromethane, carbonyl sulfide, ethyl-benzene, hexane, methyl ethyl ketone, tetrachloroethylene, toluene, trichloroethylene, vinyl chloride, and xylenes.
sulfides	0–1	Sulfides (e.g., hydrogen sulfide, dimethyl sulfide, mercaptans) are naturally occurring gases that give the landfill gas mixture its rotten-egg smell. Sulfides can cause unpleasant odors even at very low concentrations.
hydrogen	0–0.2	Hydrogen is an odorless, colorless gas.
carbon monoxide	0–0.2	Carbon monoxide is an odorless, colorless gas.
Source: Tchobanoglous, Theisen, and Vigil 1993; EPA 1995		

The Four Phases of Bacterial Decomposition of Landfill Waste

Bacteria decompose landfill waste in four phases. The composition of the gas produced changes with each of the four phases of decomposition. Landfills often accept waste over a 20- to 30-year period, so waste in a landfill may be undergoing several phases of decomposition at once. This means that older waste in one area might be in a different phase of decomposition than more recently buried waste in another area.

Phase I

During the first phase of decomposition, aerobic bacteria—bacteria that live only in the presence of oxygen—consume oxygen while breaking down the long molecular chains of complex carbohydrates, proteins, and lipids that comprise organic waste. The primary byproduct of this process is carbon dioxide. Nitrogen content is high at the beginning of this phase, but declines as the landfill moves through the four phases. Phase I continues until available oxygen is depleted. Phase I decomposition can last for days or months, depending on how much oxygen is present when the waste is disposed of in the landfill. Oxygen levels will vary according to factors such as how loose or compressed the waste was when it was buried.

Phase II

Phase II decomposition starts after the oxygen in the landfill has been used up. Using an anaerobic process (a process that does not require oxygen), bacteria convert compounds created by aerobic bacteria into acetic, lactic, and formic acids and alcohols such as methanol and ethanol. The landfill becomes highly acidic. As the acids mix with the moisture present in the land-fill, they cause certain nutrients to dissolve, making nitrogen and phosphorus available to the increasingly diverse species of bacteria in the landfill. The gaseous byproducts of these processes are carbon dioxide and hydrogen. If the landfill is disturbed or if oxygen is somehow introduced into the landfill, microbial processes will return to Phase I.

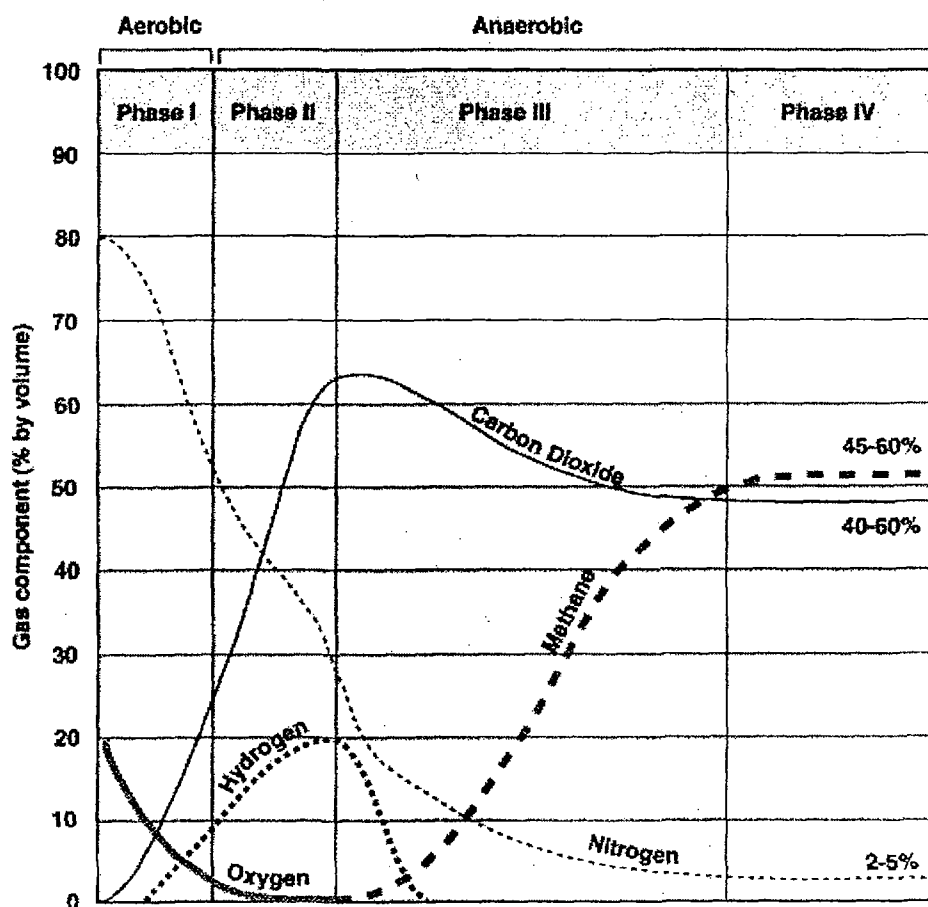
Phase III

Phase III decomposition starts when certain kinds of anaerobic bacteria consume the organic acids produced in Phase II and form acetate, an organic acid. This process causes the landfill to become a more neutral environment in which methane-producing bacteria begin to establish themselves. Methane- and acid-producing bacteria have a symbiotic, or mutually beneficial, relationship. Acid-producing bacteria create compounds for the methanogenic bacteria to consume. Methanogenic bacteria consume the carbon dioxide and acetate, too much of which would be toxic to the acid-producing bacteria.

Phase IV

Phase IV decomposition begins when both the composition and production rates of landfill gas remain relatively constant. Phase IV landfill gas usually contains approximately 45% to 60% methane by volume, 40% to 60% carbon dioxide, and 2% to 9% other gases, such as sulfides. Gas is produced at a stable rate in Phase IV, typically for about 20 years; however, gas will continue to be emitted for 50 or more years after the waste is placed in the landfill (Crawford and Smith 1985). Gas production might last longer, for example, if greater amounts of organics are present in the waste, such as at a landfill receiving higher than average amounts of domestic animal waste.

Figure 2-1: Production phases of typical landfill gas



Note: Phase duration time varies with landfill conditions

Source: EPA 1997

What conditions affect landfill gas production?

The rate and volume of landfill gas produced at a specific site depend on the characteristics of the waste (e.g., composition and age of the refuse) and a number of environmental factors (e.g., the presence of oxygen in the landfill, moisture content, and temperature).

- ↙
 • **Waste composition.** The more organic waste present in a landfill, the more landfill gas (e.g., carbon dioxide, methane, nitrogen, and hydrogen sulfide) is produced by the bacteria during decomposition. The more chemicals disposed of in the landfill, the more likely NMOCs and other gases will be produced either through volatilization or chemical reactions.
- **Age of refuse.** Generally, more recently buried waste (i.e., waste buried less than 10 years) produces more landfill gas through bacterial decomposition, volatilization, and chemical reactions than does older waste (buried more than 10 years). Peak gas production usually occurs from 5 to 7 years after the waste is buried.
- ↙
 • **Presence of oxygen in the landfill.** Methane will be produced only when oxygen is no longer present in the landfill.
- **Moisture content.** The presence of moisture (unsaturated conditions) in a landfill increases gas production because it encourages bacterial decomposition. Moisture may also promote chemical reactions that produce gases.
- ↙
 • **Temperature.** As the landfill's temperature rises, bacterial activity increases, resulting in increased gas production. Increased temperature may also increase rates of volatilization and chemical reactions. The box on the following page provides more detailed information about how these variables affect the rate and volume of landfill gas production.

How does landfill gas move?

Once gases are produced under the landfill surface, they generally move away from the landfill. Gases tend to expand and fill the available space, so that they move, or "migrate," through the limited pore spaces within the refuse and soils covering of the landfill. The natural tendency of landfill gases that are lighter than air, such as methane, is to move upward, usually through the landfill surface. Upward movement of landfill gas can be inhibited by densely compacted waste or landfill cover material (e.g., by daily soil cover and caps). When upward movement is inhibited, the gas tends to migrate horizontally to other areas within the landfill or to areas outside the landfill, where it can resume its upward path. Basically, the gases follow the path of least resistance. Some gases, such as carbon dioxide, are denser than air and will collect in subsurface areas, such as utility corridors. Three main factors influence the migration of landfill gases: diffusion (concentration), pressure, and permeability

- **Diffusion (concentration).** Diffusion describes a gas's natural tendency to reach a uni-form concentration in a given space, whether it is a room or the earth's atmosphere. Gases in a landfill move from areas of high gas concentrations to areas with lower gas concentrations. Because gas concentrations are generally higher in the landfill than in the surrounding areas, landfill gases diffuse out of the landfill to the surrounding areas with lower gas concentrations.
- **Pressure.** Gases accumulating in a landfill create areas of high pressure in which gas movement is restricted by compacted refuse or soil covers and areas of low pressure in which gas movement is unrestricted. The variation in pressure throughout the landfill results in gases moving from areas

of high pressure to areas of low pressure. Movement of gases from areas of high pressure to areas of lower pressure is known as convection. As more gases are generated, the pressure in the landfill increases, usually causing sub-surface pressures in the landfill to be higher than either the atmospheric pressure or indoor air pressure. When pressure in the landfill is higher, gases tend to move to ambient or indoor air.

- **Permeability.** Gases will also migrate according to where the pathways of least resistance occur. Permeability is a measure of how well gases and liquids flow through connected spaces or pores in refuse and soils. Dry, sandy soils are highly permeable (many connected pore spaces), while moist clay tends to be much less permeable (fewer connected pore spaces). Gases tend to move through areas of high permeability (e.g., areas of sand or gravel) rather than through areas of low permeability (e.g., areas of clay or silt). Landfill covers are often made of low-permeability soils, such as clay. Gases in a covered landfill, therefore, may be more likely to move horizontally than vertically.

Factors Affecting Landfill Gas Production

Waste Composition. The more organic waste present in a landfill, the more landfill gas is produced by bacterial decomposition. Some types of organic waste contain nutrients, such as sodium, potassium, calcium, and magnesium, that help bacteria thrive. When these nutrients are present, landfill gas production increases. Alternatively, some wastes contain compounds that harm bacteria, causing less gas to be produced. For example, methane-producing bacteria can be inhibited when waste has high salt concentrations.

Oxygen in the Landfill. Only when oxygen is used up will bacteria begin to produce methane. The more oxygen present in a landfill, the longer aerobic bacteria can decompose waste in Phase I. If waste is loosely buried or frequently disturbed, more oxygen is available, so that oxygen-dependent bacteria live longer and produce carbon dioxide and water for longer periods. If the waste is highly compacted, however, methane production will begin earlier as the aerobic bacteria are replaced by methane-producing anaerobic bacteria in Phase III. Methane gas starts to be produced by the anaerobic bacteria only when the oxygen in the landfill is used up by the aerobic bacteria; therefore, any oxygen remaining in the landfill will slow methane production. Barometric highs will tend to introduce atmospheric oxygen into surface soils in shallow portions of a landfill, possibly altering bacterial activity. In this scenario, waste in Phase IV, for example, might briefly revert to Phase I until all the oxygen is used up again.

Moisture Content. The presence of a certain amount of water in a landfill increases gas production because moisture encourages bacterial growth and transports nutrients and bacteria to all areas within a landfill. A moisture content of 40% or higher, based on wet weight of waste, promotes maximum gas production (e.g., in a capped landfill). Waste compaction slows gas production because it increases the density of the landfill contents, decreasing the rate at which water can infiltrate the waste. The rate of gas production is higher if heavy rainfall and/or permeable landfill covers introduce additional water into a landfill.

Temperature. Warm temperatures increase bacterial activity, which in turn increases the rate of landfill gas production. Colder temperatures inhibit bacterial activity. Typically, bacterial activity drops off dramatically below 50° Fahrenheit (F). Weather changes have a far greater effect on gas production in shallow landfills. This is because the bacteria are not as insulated against temperature changes as compared to deep landfills where a thick layer of soil covers the waste. A capped landfill usually maintains a stable temperature, maximizing gas production. Bacterial activity releases heat, stabilizing the temperature of a landfill between 77° F and 113° F, although temperatures up to 158° F have been noted. Temperature increases also promote volatilization and chemical reactions. As a general rule, emissions of NMOCs double with every 18° F increase in temperature.

Age of Refuse. More recently buried waste will produce more gas than older waste. Landfills usually produce appreciable amounts of gas within 1 to 3 years. Peak gas production usually occurs 5 to 7 years after wastes are dumped. Almost all gas is produced within 20 years after waste is dumped; however, small quantities of gas may continue to be emitted from a landfill for 50 or more years. A low-methane yield scenario, however, estimates that slowly decomposing waste will produce methane after 5 years and continue emitting gas over a 40-year period. Different portions of the landfill might be in different phases of the decomposition process at the same time, depending on when the waste was originally placed in each area. The amount of organic material in the waste is

an important factor in how long gas production lasts.

Sources: Crawford and Smith 1985; DOE 1995; EPA 1993.

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US Department of Health and Human Services

Health Consultation

*Prospective study
long term
effects*

*Aug 2000
Aug 2001
Aug 2002*

Parcel E Landfill Fire at Hunters Point Shipyard

HUNTER'S POINT NAVAL SHIPYARD
(a/k/a TREASURE ISLAND NAVAL STATION-HUNTER'S POINT ANNEX)

SAN FRANCISCO, SAN FRANCISCO COUNTY, CALIFORNIA

EPA FACILITY ID: CA1170090087

MARCH 2, 2001

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

Agency for Toxic Substances and Disease Registry

Division of Health Assessment and Consultation

Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

You May Contact ATSDR TOLL FREE at
1-888-42ATSDR

or

Visit our Home Page at: <http://atsdr1.atsdr.cdc.gov:8080/>

"much more preferable if we had data"

Nelson

HEALTH CONSULTATION

Parcel E Landfill Fire at Hunters Point Shipyard, San Francisco, California

HUNTER'S POINT NAVAL SHIPYARD
(a/k/a TREASURE ISLAND NAVAL STATION-HUNTER'S POINT ANNEX)

SAN FRANCISCO, SAN FRANCISCO COUNTY, CALIFORNIA

EPA FACILITY ID: CA1170090087

Prepared by:

Federal Facilities Assessment Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

STATEMENT OF ISSUES

PURPOSE

The U.S. Environmental Protection Agency Region IX requested the Agency for Toxic Substances and Disease Registry (ATSDR) to determine the public health impact on nearby residents of the August 16, 2000 fire at the Parcel E Landfill on the Former Hunters Point Naval Shipyard. Environmental data is not available for the time period during the fire to determine the exact level of contaminants to which people may have been exposed. Air sampling data were collected 15 days after the fire and continue to be collected daily. The two specific questions ATSDR will address in this health consultation are 1) whether people could experience adverse health effects from exposure to contaminants released from the fire and 2) whether the landfill continues to emit contaminants after the fire at levels likely to pose a health hazard. The questions relate to two specific periods of time: during the fire and after the fire.

no HHS
CDC
6.1.01
agency
meeting

FINDINGS

1. During the fire, components (chemical and particulate) released from the fire on August 16 could have caused short-term adverse health effects in those people exposed. Health effects could include burning, itching or watery eyes and sinuses, headache, nausea, breathing difficulty and asthma-like symptoms. Individuals highly sensitive to the effects would be anyone with previous respiratory conditions such as asthma or emphysema, children, and the elderly. Health effects would have developed within a few days after exposure and lasted no more than two to three weeks.
2. After the fire, air sampling data collected 15 days after the fire was contained, but during the smoldering and since that time do not indicate a release of chemical or physical components likely to result in adverse health effects. Therefore, the landfill did not continue to emit contaminants posing a health hazard.

no data til 2-3 weeks later

Bay Guardian

BACKGROUND

At 11:30 am on August 16, 2000, Hunters Point Shipyard base security notified the Federal Fire Department located at Hunters Point Naval Shipyard of a fire burning on the Parcel E Landfill^{1,2}. The Federal Fire Department along with the San Francisco Fire Department used water to contain the fire after approximately six hours². Approximately 37 percent of the landfill area burned. The firefighters reported that the fire produced white smoke and appeared to be a normal brush fire with no appearance of chemicals burning³. The San Francisco Bureau of Fire Investigation completed an investigation of the fire, but could not determine the cause of the fire⁴. The San Francisco Department of Health who tested the firefighters for exposure to radioactive material, found no

radioactive release³. After the 14-acre fire was put out, hot spots continued to smolder at depths less than one foot beneath the ground surface of approximately 5 acres². The Federal Fire Department continued to respond to the fire. Smoldering lasted for one month until construction/digging activities began on the landfill cap⁵.

Firefighters reported the color and characteristics of the smoke as being a brush fire as evident by charred scrub brush and grasses that grow on the landfill². However, a bystander reported seeing green, yellow and orange smoke⁶. On August 24, 2000, eight days after the fire was extinguished, a firefighter reported that a puff of green/yellow smoke was released when he shoveled some smoldering material². Photographic and video documentation of the fire show only white smoke coming from the burning grasses, bushes, and scrub growing on the landfill. A small pile of railroad ties to be used for repair of the rail line also caught fire⁵.

History and Location

Hunters Point is on a long promontory in the southeastern portion of San Francisco, extending eastward into San Francisco Bay (Figure 1). The facility is a deactivated shipyard bounded on the north and east by the bay, and on the south and west by the Bayview/Hunters Point community of San Francisco. The majority of the former shipyard, which totals 986 acres, consists of 493 acres of relatively flat lowlands constructed by placing fill materials along the bay's edge; 443 acres are under water. A small portion of the land is on a moderately to steeply sloping ridge. Most of the lowlands are covered by asphalt paving and buildings. The non-paved open areas are either sparsely vegetated or bare soil⁷.

The Hunters Point Naval Shipyard was originally established as a commercial shipyard in 1870. The Navy acquired the property in 1941, eleven days before the attack on Pearl Harbor. From 1941 to 1974, the major activities were ship building, maintenance, and repair of naval ships and submarines⁸. Additionally, the facility was used for base housing, naval ordnance training exercises, radiological defense research, and research on exposure to radioactive fallout. In the mid 1950s the shipyard employed 8,500 civilians. The Navy deactivated the shipyard in 1974. In 1989, following the Navy's environmental investigations, the U.S. EPA placed the shipyard on its National Priorities List, thus, designating it a federal "Superfund" site⁹.

The shipyard was divided into six parcels, Parcels A-F (Figure 2) to more effectively manage environmental cleanup and transfer. Parcel A contained the housing structures on 88 acres. The finding of Suitability to Transfer documents have been signed and Parcel A is ready for transfer to the City of San Francisco. The remaining five parcels are in various stages of investigation and cleanup. Parcel B consists of 66 acres previously used for offices, commercial buildings, warehouses, and submarine drydocks. Parcel C consists of 79 acres used for industrial purposes including ship drydocks. Parcel D consists of 125 acres of industrial buildings, ship repair facilities, and a crane. Parcel E consists of 135 acres containing the industrial landfill. In the past, the radiological laboratory and bachelor enlisted housing building were located on Parcel E. Parcel F is made up of 443 acres of underwater property¹⁰.

1958

30 yr

Parcel E Landfill is a 46-acre industrial landfill which operated from 1958 to 1974. The landfill received liquid chemical waste, asbestos, domestic wastes and refuse, dredge spoil materials, sandblast grit solvent wastes, and low-level radioactive wastes from shipboard radium dials including electronic equipment⁷.

In 1974, the shipyard was placed on industrial reserve. Soon thereafter, the Navy leased most of the shipyard to a commercial ship repair company that operated as master caretaker/tenant. In 1986, when the Navy discovered the company committed many environmental law violations for improper waste disposal, they canceled their lease⁷. The company also reportedly disposed of unknown wastes in the landfill. A soil layer was put on the landfill at some time after 1974. The soil layer is not uniform in its thickness and portions of the landfill material are less than one foot below ground surface⁵.

Hunters Point Naval Shipyard was approved for closure and disposition by the Base Realignment and Closure (BRAC) Commission in 1991. Operational base closure was April 1, 1994. It is currently under caretaker status by the Naval Facilities Engineering Command, Engineering Field Division - Southwest, located in San Bruno, California. Portions of Hunters Point Naval Shipyard have already been leased to private parties. Because of the presence of hazardous materials resulting from past shipyard operations and the operations of a commercial machine shop that had leased Hunters Point Naval Shipyard from 1976 to 1986, the EPA placed the installation on the National Priorities List in 1989⁷.

Current Land Use

Hunters Point Naval Shipyard is currently known as "The Point" to more than 250 artists who lease space on site. It is one of the largest artist communities in the country. It is open to the public two times per year during "Open Studio" where artists show their work in their studios. Otherwise, access is restricted¹¹.

5-1986
The nearest off-site homes are less than 800 feet from Landfill E in the community known as Bayview/Hunters Point¹². The Bayview/Hunters Point district is bounded by Newhall Street, US Highway 101, Bayview Park Road and San Francisco Bay to the north and Mendell Street, Evans Avenue, Polou Avenue, and the bay to the south¹³. The Bayview/Hunters Point community is made of homes within the 94124 zip code of San Francisco. Figure 3 shows the demographic breakdown of the community consisting of nearly 89 percent minority populations. Similar to many urban, industrial, minority communities across the U.S., Bayview/Hunters Point has higher than the national average rates of asthma, respiratory disease, breast cancer, and diabetes^{14,15}. Therefore, they are considered a vulnerable population and may be more sensitive to the effects of exposure to hazardous substances.

Hunters Point Naval Shipyard was constructed on fill material and the majority of the base is just 10 feet above sea level. The western edge of the base slopes moderately steep. The Main Gate sits approximately 40 feet above sea level (Figure 4).

After the fire, the Navy began construction of a landfill cap over slightly more than the 14 acres where the fire was located, but not over the entire landfill. The cap, consistent with the requirements of the Resource Conservation and Recovery Act (RCRA), is designed to prevent future combustion within the burn area by preventing oxygen from getting into the landfill from the outside. Completion of the cap, including the planting of a vegetative cover, is anticipated to be complete at the end of January 2001¹⁶. The Navy is conducting subsurface monitoring of the landfill to ensure the smoldering areas are completely extinguished. Preliminary results of the sampling indicate no smoldering within the landfill material. The Navy expects to complete this evaluation in February 2001⁴.

DISCUSSION

Because data collection was not conducted at the time of the fire, ATSDR used mathematical models to assist us in determining probable areas where residents of Hunters Point Bayview or people working at the Hunters Point Naval Shipyard could have been exposed to the components of the fire. Mathematical modeling helped ATSDR determine the geographical areas where people were possibly exposed. Models help us estimate extent of the boundaries of exposure to the fire components. Two different models were used and the result combined. One model used the information about the high temperature of the fire which produced a lifting effect, the other model used the wide lateral extent of fire at ground level. (Figure 5). Additionally, ATSDR estimated the degree of exposure during the month long smoldering event (Figure 6). ATSDR used actual meteorologic data from San Francisco Airport, Oakland Airport, and San Francisco Physical Oceanographic Real-Time System¹⁷. The combination of the weather conditions during the 6-hour event combined with the high source temperature (fire), source characteristics such as, the large size of the source (14 acres), and the fact this plume is based on a very short span of time, resulted in temperatures high enough to lift the smoke plume and disperse contaminants downwind from the source and over the bay. Lower temperatures, smaller source area, changing wind directions, and other meteorological characteristics contributed to a more circular pattern during the month-long smoldering. Since the actual concentration of contaminants is not known, the values are noted in terms of percent of the maximum source concentration.

To determine the health impact of the fire on nearby residents and workers, ATSDR relied on information from other landfill fires, railroad tie fires, forest, and wildland fires across the country to determine possible components of the fire and smoke at Hunters Point Naval Shipyard. Additional information about the fire components possibly released into the air were ascertained from Hunters Point Shipyard surface soil, soil rinsate, and surface water analysis. We also examined meteorological data about conditions at Hunters Point Naval Shipyard at the time of and following the fire. The following discussion will address two aspects: 1) potential human exposure to general combustion products during the fire and 2) human exposure to measured contaminants from data collected after the fire, during the smoldering event.

Information about the health of forest and wildland firefighters and people exposed to brush fires landfill fires, and burning railroad ties in other places across the country provided information about the possible health consequences that could occur in people in the Bayview Hunters Point community.

Local information about the general health status and demographic makeup of the people possibly exposed to the Hunters Point Naval Shipyard Parcel E landfill fire identifies those people who may be more sensitive to the effects of exposure to the fire. Information about the health of the individuals within Bayview/Hunters Point community was provided by the San Francisco Department of Public Health who obtained reports from local clinics, doctors offices, and hospitals before and after the fire.

Human Exposure to General Combustion Products

To address the question of whether people could experience adverse health effects from exposure to contaminants released from the fire, ATSDR first determined the chemical and physical components that were likely released from the fire. Without actual air data collected during the fire, ATSDR reviewed the available scientific literature of other landfill fires, wildfires, and prescribed burns.

Numerous groups including the U.S. Department of Agriculture Forest Service, Johns Hopkins University, University of Washington, U.S. Department of the Interior, National Park Service, Centers for Disease Control and Prevention; National Institute for Occupational Safety and Health, American Medical Association, American Industrial Hygiene Association, and various states have studied the components of fire and smoke and the health effects seen in firefighters over the last 12 years.

The main components of the fire that pose the greatest hazard by way of inhalation are carbon monoxide, carbon dioxide, aldehydes, (i.e., formaldehyde and acrolein) ozone, polyaromatic hydrocarbons (PAH)s, benzene (discussed in the following section), and respirable particulates^{18,19,20,21,22}.

Carbon Monoxide

Carbon monoxide is a colorless, odorless gas released during incomplete combustion (i.e., fire) which primarily affects the nervous system. Exposure to carbon monoxide can cause headache, dizziness, and lightheadedness. Exposure to low to moderate levels can affect concentration, cause memory and vision problems, loss of muscle coordination, temporary reduction in lung function, bronchitis, and asthma-like symptoms^{18,19,20,21}.

Carbon Dioxide

Carbon dioxide is a colorless, odorless gas released by our bodies when we exhale. Exposure to moderate amounts of carbon dioxide can cause lightheadedness, confusion, and loss of consciousness²¹.

Formaldehyde

Formaldehyde is a colorless, flammable gas with a strong, pungent odor. It can form explosive mixtures with air and oxygen. As an important industrial chemical of major commercial use, formaldehyde is found throughout the environment. In solution, it has a wide range of uses: in the manufacture of resins and textiles, as a disinfectant, and as a laboratory fixative or preservative. Formaldehyde is formed during incomplete combustion of hydrocarbons²². In outdoor air it can originate from many sources such as incinerators, photochemical smog, and engine exhaust. Atmospheric levels of formaldehyde have been reported to range from less than 0.005 ppm to 0.06 ppm near industrial outlets or in areas of heavy smog²³. Workers who smoke are exposed to additional levels of formaldehyde, since cigarette smoke contains as much as 40 ppm of formaldehyde by volume²⁴. The first signs or symptoms noticed from exposure to formaldehyde at concentrations ranging from 0.1 to 5 ppm are burning of the eyes, tearing, and general irritation to the upper respiratory passages. Higher exposures (10 to 20 ppm) may produce coughing, tightening in the chest, a sense of pressure in the head, and palpitation of the heart^{21,25,26,27}.

Acrolein

Acrolein is a colorless to yellow liquid which produces vapors with a foul choking odor. It is released from the burning of natural materials. Burning tobacco and other plants forms acrolein. People can also breathe acrolein when near automobiles, because burning gasoline forms acrolein, which enters the air^{21,22,23}. Oil or coal power plants also release small amounts of acrolein. Acrolein is formed when fats are heated. Small amounts of acrolein may also be found in foods such as fried foods, cooking oils, and roasted coffee. In several large cities acrolein has been measured at levels of 0.009 ppm²⁷. The levels in inside air can be much higher when tobacco is burning. For example, in a car with three people smoking and the windows closed, a person could breathe in 0.300 ppm. Acrolein can be smelled at levels above 0.160 ppm. So, a person would probably smell acrolein and notice eye, nose, and throat irritation before it harms the lungs²⁷.

Ozone

Ozone is a colorless gas with a sharp odor which can be smelled well below the permissible levels of exposure. At low exposure doses, an individual may experience irritation of the eyes, dryness of the nose and throat and cough. At moderate levels, headache, stomach ache and vomiting can occur. Ozone is the main component in smog that can cause breathing problems, aggravate asthma, and increases the severity and incidence of respiratory infections^{19,21}.

PAHs

Polycyclic aromatic hydrocarbons (PAHs) are a group of more than 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. They are also found in railroad ties. The primary sources of exposure to PAHs for most of the U.S. population are inhalation of the compounds in tobacco smoke, wood smoke, and ambient air, and consumption of PAHs in grilled foods. Throat irritation, cough, and respiratory difficulties were noted in factory workers exposed to moderate levels of PAHs^{25,26,27}.

wind \Rightarrow east

Particulates

Particulates are small pieces of material released from combustion or from physical release into the air. The effect particulates have on people when breathed in depends on the size of the particles. Larger particles (greater than 10 microns) get trapped by the nasal passages. Particles greater than 5 microns travel down the airway to the bronchioles and are removed by the cilia and by coughing. Respirable particles (0.5-5 microns) can travel deeper into the alveolar region of the lungs causing irritation, bronchitis and respiratory effects. Particles smaller than 0.5 microns do not usually stay in the lungs, but instead are exhaled²⁷. The legal airborne permissible exposure limit for workers is 50 ppm averaged over an 8-hour period²⁷.

Public Health Implications

The likelihood of becoming sick from chemical exposure increases as the amount of chemical exposure increases. This is determined by the length of time and the amount of chemicals to which someone is exposed. Short-term exposure typically refers to contact with a contaminant by breathing it in, eating or drinking it, or touching it to your skin or eyes for a short period of time, less than one year. Long-term exposure typically refers to contact with a contaminant for more than one year^{21,22,24}. Short-term health effects also called acute health effects are conditions, symptoms, or health changes that may occur immediately or shortly after exposure and last for less than two to three weeks^{21,22,24}. Long-term health effects also called chronic health effects are conditions, symptoms, or health changes that can occur at some time after exposure and can last for months or years. Short term health effects can occur from exposure to high or low amounts of chemical contaminants. Short term health effects can also occur from short- or long-term exposures. Most long term health effects however, result from repeated exposures to a chemical that occur over and over again²¹.

Health information collected all over the county show that firefighters may experience both reversible, short-term health effects, such as eye and respiratory tract irritation and long-term adverse health effects, such as decreased lung function, and increased incidence of respiratory illness^{28,29,30}. Long-term adverse health effects have been seen in a small portion of firefighters who were exposed to fire components on a daily basis for more than one year^{30,31,32}. Data from studies shows that between one and 10% of firefighters have exposures to fire and smoke components which exceed recommended Time Weighted Average for a normal 8-hour day/ 40 hour workweek. Less than 5% of these smoke exposures exceed Occupational Safety and Health Administration (OSHA) permissible exposure limits which are less stringent than the recommended limits, but which are legally applicable to federal agencies³². The exposures of firefighters to smoke and fire components have been identified by both the respired air from the lungs of firefighters and from actual air samples collected by monitors worn on the neck and chest of firefighters. Reports of studies conducted since 1988 show consistent results. In several studies, firefighters, who were given questionnaires after days of exposure, reported headaches, cough, shortness of breath, lightheadedness and wheezing^{18,19,30,31}.

Reds Enviro Health Unit c OSHA
lay term. health c PPHS

ATSDR spoke with county nurses in each of three counties from Montana, Idaho, and Wyoming to provide information about health problems reported in the general population affected by the fires this past summer. Health warnings to limit time outside were distributed by newspaper, television, and radio and posted in grocery stores and post offices. Most of the fire and smoke related cases reported eye, nose, and throat irritation that subsided within a few hours after exposures stopped. None of the county nurses reported adverse pregnancy or birth outcomes related to the fire and smoke. Most phone calls the counties received were not related to health, but to how to get the smell of smoke out of the furniture and carpeting³³⁻³⁸.

Hunters Point Naval Shipyard Parcel E Landfill Fire

August 16, 2000 was an unusually hot summer day in San Francisco with temperatures reaching 93 degrees⁶. Many homes in the area do not have air conditioning because summers in San Francisco are typically mild. So it is likely that many homes had their windows open, which is probably the way most people were exposed to the release of components from the Parcel E fire.

The fire at the Hunters Point Shipyard Parcel E Landfill lasted for six hours with small amounts of release occurring during the smoldering, which lasted for one month⁵. Wind rose information collected on Parcel B of the facility corresponds with that collected at the San Francisco Airport, Oakland Airport, and San Francisco Physical Oceanographic Real-Time System. All data show that for the six hour period during the fire air flow direction was toward the bay and away from the Bayview Hunters Point Community¹⁷. Wind rose information provides predominant wind direction over a specific period of time. In this case, the wind rose information shows that the wind may have blown fire components away from citizens. However, topography, and other factors play a part in whether the fire components could have reached inland, up wind areas. Citizens have reported that the smoke swirled up toward the community. Therefore, exposure to fire and smoke components were possible.

Information about the duration of the Hunters Point Shipyard Parcel E landfill fire and meteorological data suggest that the contaminant levels of the Parcel E Landfill fire to which people were exposed would be less than typical exposures to firefighters across the country. The duration of the Parcel E landfill fire was less than one day and reportedly estimated to be six hours and covered an area of 14 acres as compared to the wildland fires we researched which last weeks to months and envelop millions of acres. The information from the wildland fires of Montana, Wyoming, Washington, California, Idaho, and Oregon, show that even after months of exposure of a community to visible smoke, reversible short-term health effects were reported^{18-20,23,24,27-29}. This information provides a "worst case" scenario as to the possible chemicals and physical components released and also the worst possible health effects that might occur in the Bayview/Hunters Point community.

Evaluation of the Hunters Point Parcel E Landfill information, such as the duration of the fire and smoldering events, the land area involved, the wind direction, wind speed, ambient air temperature and photographic information of the fire indicate that adverse health effects, such as eye and respiratory irritation are possible. This also suggests that pre-existing conditions such as asthma and emphysema, could be exacerbated by the fire and smoke components. Children with asthma, adult asthmatics, and elderly adults with respiratory conditions are more highly sensitive to poor air quality. The available study information strongly indicates that long term adverse health effects such as insufficient tissue oxygenation, increase risk of cancer, and irreversible adverse health effects are unlikely. Additionally, adverse effects on the unborn children of pregnant women exposed to the fire and smoldering events are also unlikely.

EPA 27 days p fire
notified

Human Exposure to Measured Contaminants

One air sample was collected from the smoldering area on September 1, 2000. Continuous 24-hour per day air sampling began September 8, 2000 at six air monitoring stations surrounding Parcel E Landfill. Air samples collected after the fire was contained and during the smoldering events were fully analyzed to adequately characterize the fire and smoke components. Analysis included particulates, pesticides, polychlorinated biphenyls (PCBs), semivolatile organic compounds, volatile organic compounds, metals, dioxin and furans, chlorine and hydrogen chloride, phosgene, and radioactivity. The analysis allowed for determination as to whether the fire extended only to the surface brush or also included toxic components of the landfill. Even though the actual smoke from the active fire was not sampled, sufficient information is available about the deposition of contaminants onto the soil, surface water, and those extracted from the soil to provide a scientific significant representation of the components of the fire. Additionally, air sampling information collected indicated the contaminant levels to which people are currently exposed.

Since sampling began on August 31, 2000, no chemicals have been detected at the Parcel E landfill at levels likely to result in adverse health effects in the surrounding Bayview/Hunters Point community. Results of all the air samples collected are presented by the Navy and posted on their web site <http://w4.efds.w.navy.mil/dep/HP/HntPt/indexHP.htm>. ATSDR reviewed the data collected at the Parcel E air monitoring stations since sampling began in August 2000. Air monitoring stations have detected low levels of PCBs (Aroclor 1260), the pesticide endrin, dioxin/furans, benzene, bis-2-ethylhexyl phthalate, chloroform, trimethylbenzene, and manganese in one or more samples from the Parcel E stations³⁹. Table 1 details the summary of sampling data and ATSDR's evaluation.

Manganese and benzene are the two chemicals which have exceeded ambient air quality standards on several different days since sampling began 15 days after the fire was contained⁴⁰. No other chemical was above air quality standards and all are well below levels likely to cause adverse health effects.

chronic effects
of manganese

9

WHO Class A Carcinogen
bone marrow suppression
DNA abnormalities

ATSDR reviewed the toxicological information about these chemicals to determine if the levels currently detected are likely to result in adverse health effects in both the general population and in those people who may be hypersensitive or predisposed to respiratory complications.

Assumptions

In our evaluation of the likelihood of people in the Hunters Point Bayview Community to experience adverse health effects, ATSDR made assumptions that would tend to overestimate the level of hazard and level of exposure. The rationale for doing this is because there are no data that documents the actual chemicals to which people were exposed during the fire. This overestimation errs on the side of prudent public health practice while still based on sound scientific evidence. In this evaluation, ATSDR assumed that chemical and particulates released from the fire at Parcel E Landfill included similar components as those released from other fires including landfill fires, railroad tie fires, vegetative fires, wildland fires, and forest fires. Additionally, ATSDR assumed that smoke was coming into the community. Information collected from meteorological stations, photographs, and video of the actual fire show smoke blowing away from community. Our assumptions would tend to overestimate the amount of chemicals and particulates to which people would actually be exposed. Since the time of the fire was 11:30 am to approximately 5:30 pm, ATSDR assumed that children and adults would be outside of their homes. This assumption would also tend toward a worst case exposure.

Benzene

ATSDR has evaluated the likelihood of exposures here to cause adverse health effects in children and adults breathing releases from the Parcel E Landfill. Benzene was detected in outdoor air at all sampling stations surround Parcel E landfill. The maximum benzene level detected was 0.00143 ppm (4.63 ug/m3). A review of the available scientific literature indicates that levels of benzene 30 times higher than those detected here have not been shown to cause adverse health effects. The No Observed Adverse Effect Level (NOAEL) for benzene was determined to be 0.031 ppm a level 34 times higher than that detected at the landfill⁴¹. A newly released study, which sampled "prefueling" breath levels of benzene that represent benzene exposures while driving in your car, showed average levels of 0.003 ppm and ranged from less than 0.001 - 0.022 ppm⁴². Levels (700-3,000 ppm) can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. In most cases, people will stop feeling these effects when they stop being exposed and begin to breathe fresh air⁴⁴⁻⁴⁶.

During the 1990s, several large-scale studies of benzene concentrations in air, food, and blood have added to our knowledge of its widespread presence in the environment. The new studies have confirmed earlier findings of the U.S. Environmental Protection Agency studies and other large-scale studies in Germany and the Netherlands about the levels of human exposure and major sources. The new studies found that indoor concentrations were generally higher than outdoor concentrations. Major sources of exposure continue to be active and passive smoking, auto exhaust, and driving or riding in automobiles⁴¹.

Manganese

Manganese is a natural component in the environment, present at low levels in water, air, soil, and food. In drinking water, natural levels are usually about 0.004 ppm. In air, levels are usually about 0.087 ppm. Levels in soil range from 40 to 900 ppm^{47,48}. Manganese is also a normal component of living things, including both plants and animals, so manganese is present in foods. For nearly all people, food is the main source of manganese, and usual daily intakes range from about 2,000 to 9,000 ppm. The exact amount taken in depends on a person's diet^{47,48}.

The maximum level of manganese detected from air monitoring stations after the fire was contained was 0.0001 ppm (0.294 ug/m³). This level is 400 times lower than the Lowest Observed Adverse Effect Level of 0.04 ppm⁴⁹. Therefore, current levels of manganese are not likely to result in adverse health effects.

COMMUNITY HEALTH CONCERNS

If I smelled smoke, am I going to have health problems as a result?

Not necessarily. Being able to smell smoke is based on its odor threshold. A chemical's odor threshold is the lowest concentration of that chemical in air that people can smell. The concentration of many chemicals that emit detectable odors is much lower (often 10 to 1000 times lower) than the amount of chemical likely to cause health problems. Even though people differ, some health conditions such as asthma may be triggered by certain odors even though the concentration of chemical is much lower than could cause a toxic effect.

Without sampling data collected during the fire, how do you know the fire was not a "toxic fire?"

ATSDR assumed that the fire burned "toxic" or harmful materials such as railroad ties as well as sawdust, brush, and grasses. Because there was not sampling data collected during the fire, we used existing information from other landfill fires, railroad tie fires, and forest fires to predict whether people were likely to experience health problems from breathing the components released by the Hunters Point Shipyard Parcel E Landfill fire. Although the fire would have been "toxic," the effects would be of short duration.

How do you know the health problems of people in the Bayview Hunters Point community are short-term?

The reason we believe that health effects will be short-term is based on ATSDR's review of the scientific literature including medical reports and other information which detail 1) the chemicals that could have been released by the fire 2) the likely health effects from those chemicals, and 3) the health effects seen in firefighters and in communities near various types of fires. The fire information we reviewed included details about landfill fires, railroad tie fires, and forest fires. Reports of human exposure to fire components under similar circumstances lasting less than one year showed only short-term health effects. No long-term health effects were reported. Based on the duration and extent of the fire, distance of the fire from the community, and most frequent wind direction, our conclusion is that people breathing the components released by the Hunters Point Shipyard Parcel E Landfill fire may have experienced health problems such as burning, itching or watery eyes and sinuses, headache, nausea, breathing difficulty, and asthma-like symptoms which could have begun within a few days after exposure and lasted no more than two to three weeks.

Is there a fire currently burning underground in the Parcel E landfill?

Air monitoring stations, which have been collecting data for 24 hours a day since September 8, 2000, have not detected any of the components which would be released from an underground fire. On September 22, 2000, the Navy made a thermal image of the area, which did not show any hot spots on the surface of the burned area. As a final measure to ensure that there are no remaining subsurface smoldering areas, the Navy is conducting subsurface monitoring of temperature and fixed gas concentrations. Preliminary results indicate that there is no continued subsurface smoldering. A final report is expected by March 2001.

Have there been landfill fires at Hunters Point Shipyard before?

The Navy told ATSDR that there have not been any other fires on the Parcel E landfill in the past. However, there have been fires in other areas of the Hunters Point Shipyard such as grass fires, empty metal fuel tanks, and fires in buildings. None of the previous fires was this large and therefore, they should not have long-term effects to the off-site community. However, we are recommending that future air releases be reported to the community the same day.

If the current chemical contaminant levels from Parcel E are safe, why does the Bayview/Hunters Point community have so many health problems?

Numerous city, state, and federal health care groups are working to determine why the Bayview/Hunters Point community has so many health problems, but it is not known at this time. It is a widely reported fact that the Bayview/Hunters Point community has higher than average incidence of asthma, respiratory disease, diabetes, lung cancer and other health problems. However, the rates here are similar to other urban communities with numerous industries and similar economic and demographic make-up. No one factor has been shown to be the cause, but could be a combination of factors such as exposure to industrial pollutants, access to medical care, lifestyle and dietary factors.

How can the situation change so that in the future the community is informed of similar events?

The Navy along with community members, U.S. EPA, and local agencies, began meeting approximately every three weeks to discuss and develop notification procedures for the community in case of future events.

For More Information

Your questions and comments are important to ATSDR and should be directed to Bill Nelson, ATSDR Regional Representative, at 415-744-2194. You can also contact our Atlanta office, toll free, at 1-888-42-ATSDR (1-888-422-8737). Please refer to Hunters Point when asking to speak with a health assessor in the Division of Health Assessment and Consultation.

CONCLUSIONS

1. Components (chemical and physical) released from the fire on August 16 could have caused short-term adverse health effects in those people exposed. Health effects could include burning, itching or watery eyes and sinuses, headache, nausea, breathing difficulty and asthma-like symptoms. Individuals highly sensitive to the effects would be anyone with previous respiratory conditions such as asthma or emphysema, children, and the elderly. Health effects would be of short duration: developing within a few days of exposure and lasting no more than two or three weeks after exposure stopped. The Bayview/Hunters Point community already has a high incidence of respiratory diseases.
2. Long-term health effects such as decreased lung function, increase in cancer risk, and insufficient tissue oxygenation are unlikely to be seen in people who were exposed to components released from the Parcel E landfill fire because the length of time people would have been exposed was short and the concentrations were low. Additionally, the unborn children of pregnant women who were exposed are unlikely to experience any adverse health effects as a result of their exposure.
3. Air sampling data collected 15 days after the fire was extinguished, but during the smoldering and since that time do not indicate a release of chemical or physical components likely to result in adverse health effects.

RECOMMENDATIONS

1. If people are experiencing respiratory problems, they should seek the attention of their personal medical care provider.
2. Because the community near the boundary of Hunters Point Shipyard has higher than average rates of respiratory disease, the Navy should take extra precautionary measures to reduce particulates and chemicals that may be stirred up or released during cleanup activities on base. ATSDR also recommends that the Navy conduct air monitoring during planned events which are likely to release particulates or chemicals into the air.
3. As a way of reducing exposures to this vulnerable population, ATSDR recommends that the Navy notify the Bayview/Hunters Point community of any planned or unplanned air releases that have the potential to move off base.

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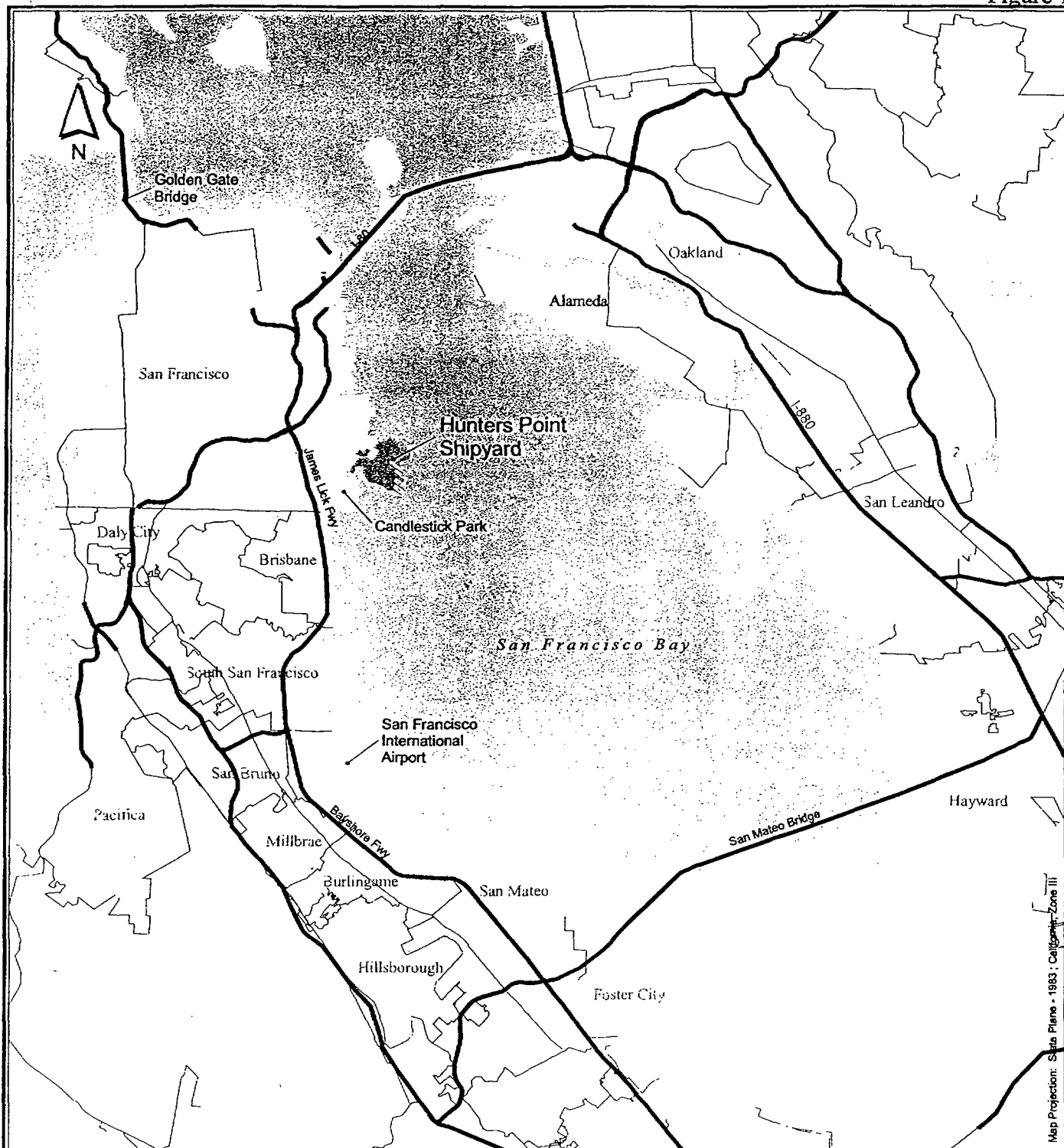
Walker L. Colorado State University Cooperative Extension agricultural engineer and research associate, chemical and bioresource engineering. Burning Wood Better - Back to HearthNet Specific Information Area <http://www.hearth.com/what/burningwoodbetter.html> September 1992.

Table 1 - Summary of Parcel E Landfill Air Monitoring Data and ATSDR's Evaluation

Chemical Component	Maximum Concentration (ug/m3)	Minimum Concentration (ug/m3)	Mean Concentration (ug/m3)	Modeled Exposure Concentration	Comparison Concentration (ug/m3)	ATSDR Hazard Evaluation
1,2,4-Trimethylbenzene	77.2	2.56	39.88	0.772	6.2	No Hazard
1,3,5-Trimethylbenzene	13.7	13.7	13.7	0.137	6.2	No Hazard
Acenaphthene	0.00512	0.00301	0.004065	0.0000512	220	No Hazard
Anthracene	0.00563	0.003	0.004315	0.0000563	1100	No Hazard
Aroclor 1260 (PCB)	0.0432	0.0121	0.0136	0.000432	0.0031	No Hazard
Benzene	4.63	0.415	1.17	0.0463	0.22	No Hazard
Bis(2-ethylhexyl)phthalate	0.744	0.00355	0.024	0.00744	0.45	No Hazard
Cobalt	0.012	0.012	0.012	0.00012	220	No Hazard
Carbon Tetrachloride	0.629	0.0629	0.34595	0.00629	0.12	No Hazard
Chloroform	1.22	1.17	1.195	0.0122	0.077	No Hazard
Copper	0.442	0.0184	0.2302	0.00442	150	No Hazard
Dibenzofuran	0.0534	0.00385	0.028625	0.000534	15	No Hazard
Dichlorodifluoromethane	2.72	1.09	1.905	0.0272	180	No Hazard
Diethylphthalate	0.0586	0.00406	0.03133	0.000586	2900	No Hazard
Di-N-Butylphthalate	0.0729	0.00696	0.03993	0.000729	370	No Hazard
Endrin	0.583	0.0012	0.2921	0.00583	1.1	No Hazard
Ethylbenzene	1.78	0.478	1.129	0.0178	1100	No Hazard
Fluoranthene	0.00799	0.00307	0.00553	0.0000799	150	No Hazard
Fluorene	0.00907	0.00620	0.007635	0.0000907	150	No Hazard
Lead	0.216	0.029	0.1225	0.00216	1.5	No Hazard
Manganese	0.294	0.05	0.172	0.00294	0.052	No Hazard
Methylene Chloride	1.84	1.74	1.79	0.0184	3.8	No Hazard
Phenanthrene	0.0415	0.00321	0.022355	0.000415	54	No Hazard
Styrene	5.92	0.469	3.1945	0.0592	1000	No Hazard
Tetrachloroethene	0.814	0.678	0.746	0.00814	0.031	No Hazard
Toluene	9.31	0.754	5.032	0.0931	420	No Hazard
Trichlorofluoromethane	2.47	1.12	1.795	0.0247	730	No Hazard
Xylene, Total (a)	26.5	0.868	13.684	0.265	7300	No Hazard

This table lists chemicals that have been detected at some time during sampling. Modeled Exposure Concentrations are air contaminant concentrations (not dose) to which people could be exposed and are based on mathematical model results that show less than 1% of maximum concentrations that would be expected to be released outside the base into the community. Comparison Concentrations are EPA's Region III Risk Based Concentration screening values. For lead, the California State Action Level. The complete list of chemicals analyzed but not detected are not included in this table. Complete data is contained at the Navy's web site at <http://w4.eidsw.navy.mil/dep/HP/HntP/indexHP.htm>

Figure 1

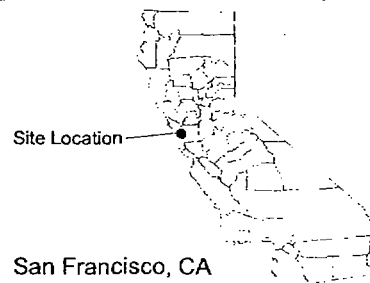


Map Projection: State Plane - 1983, California Zone III

Hunters Point Shipyard

San Francisco, CA

VICINITY MAP



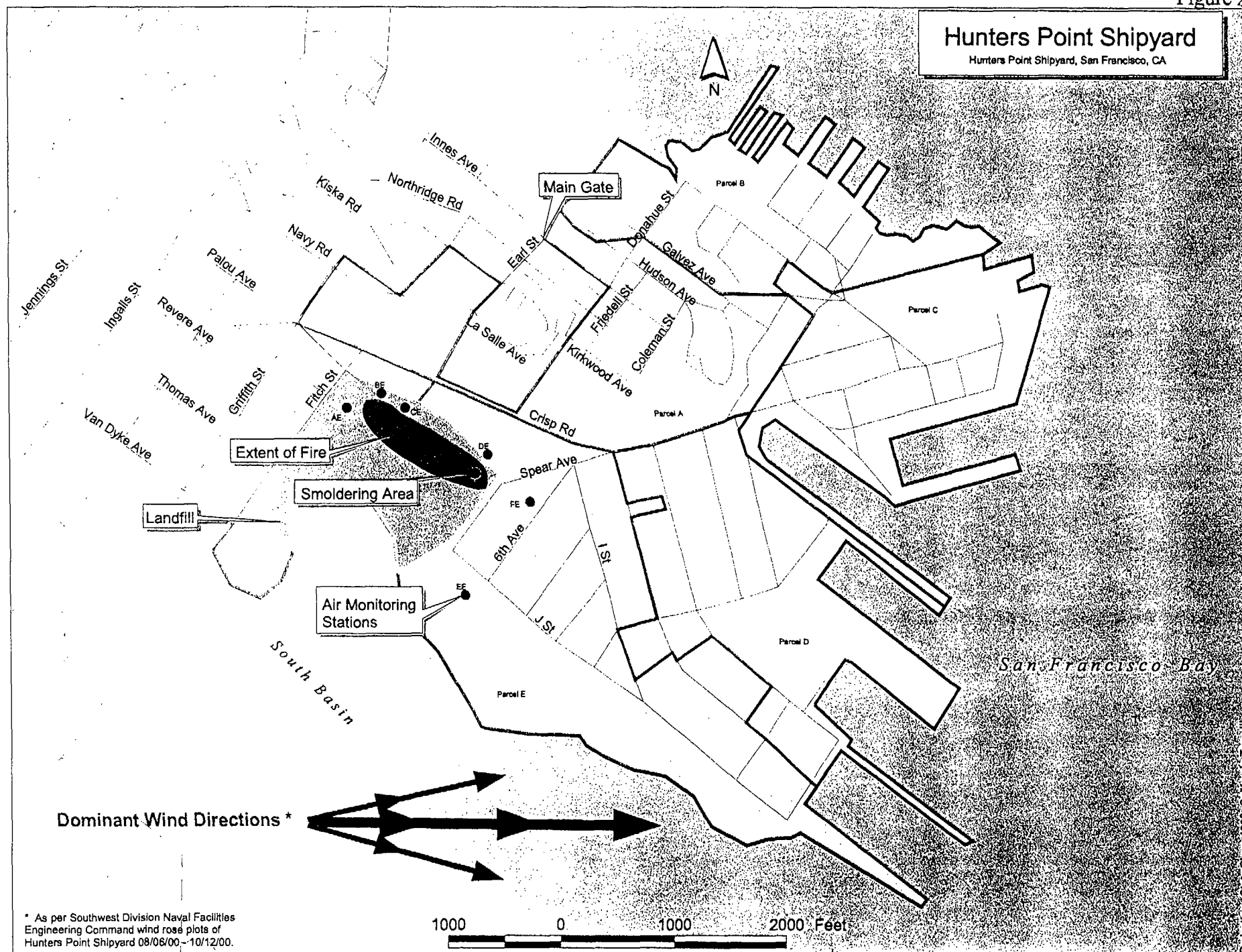
San Francisco, CA



Figure 2

Hunters Point Shipyard

Hunters Point Shipyard, San Francisco, CA



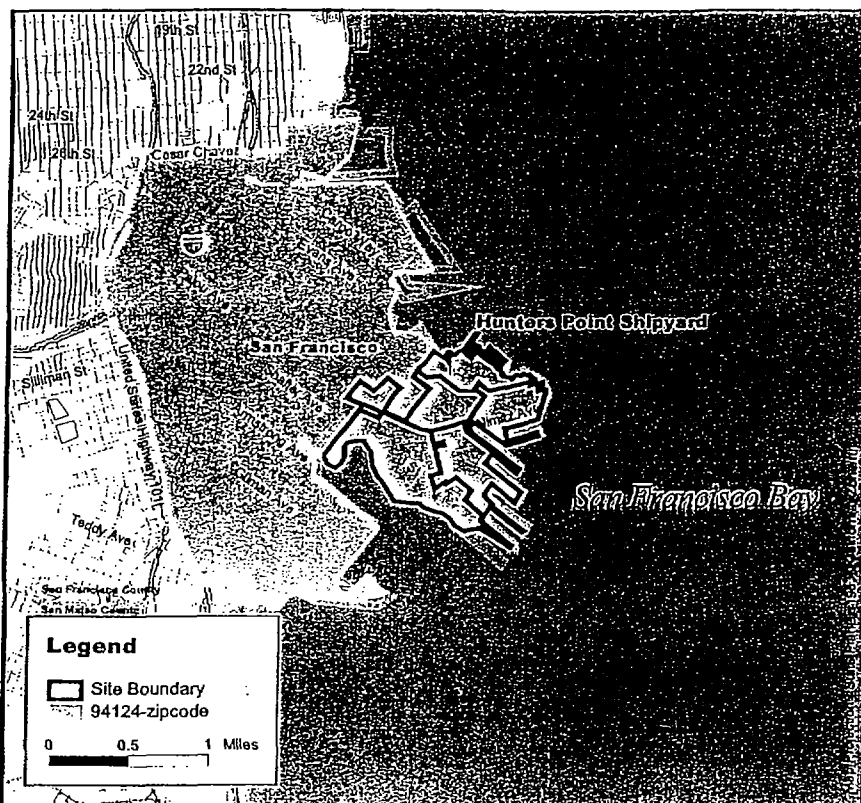
* As per Southwest Division Naval Facilities Engineering Command wind rose plots of Hunters Point Shipyard 08/06/00-10/12/00.

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Hunters Point Shipyard

San Francisco, California

INTRO MAP



San Francisco County, California

Demographic Statistics Within Zipcode of Site*

Total Population	27134
White	3084
Black	17338
American Indian, Eskimo, Aleut	104
Asian or Pacific Islander	5388
Other Race	1219
Hispanic Origin	2541
Children Aged 6 and Younger	3122
Adults Aged 65 and Older	3343
Females Aged 15 - 44	6424
Total Housing Units	8875

Base Map Source: 1995 TIGER/Line Files

Demographics Statistics Source: 1990 US Census

*Calculated using an area-proportion spatial analysis technique

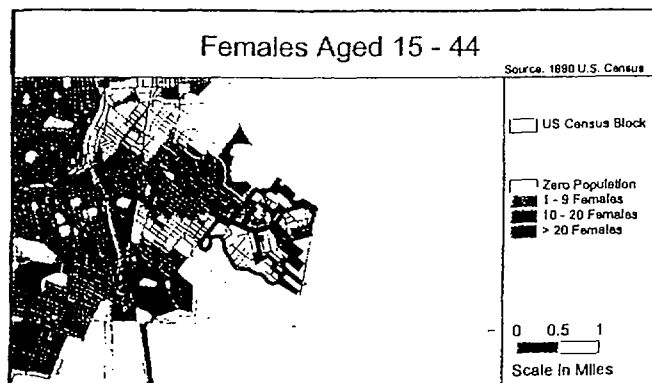
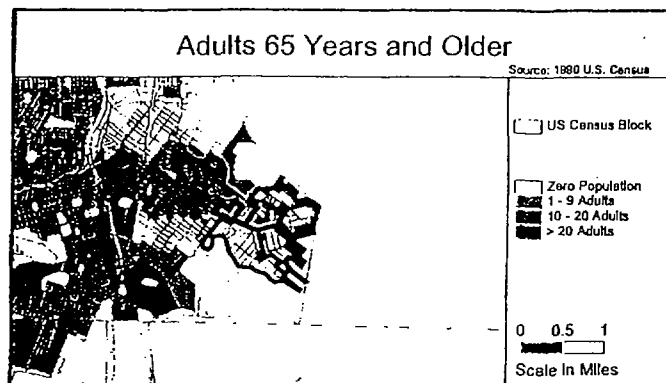
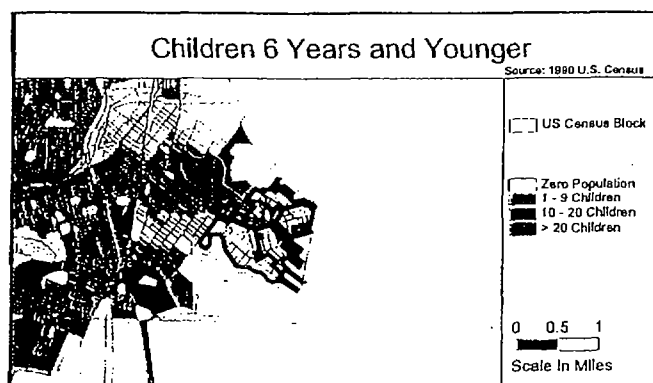
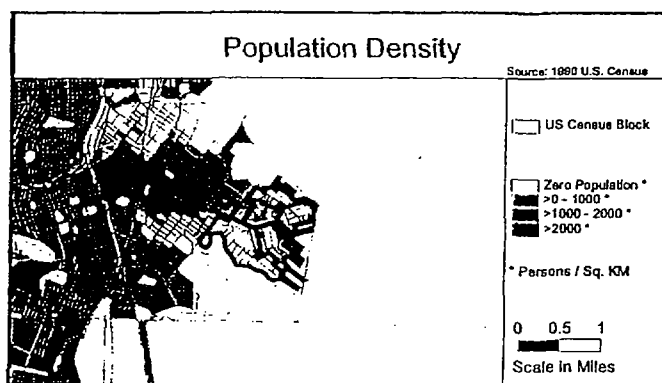
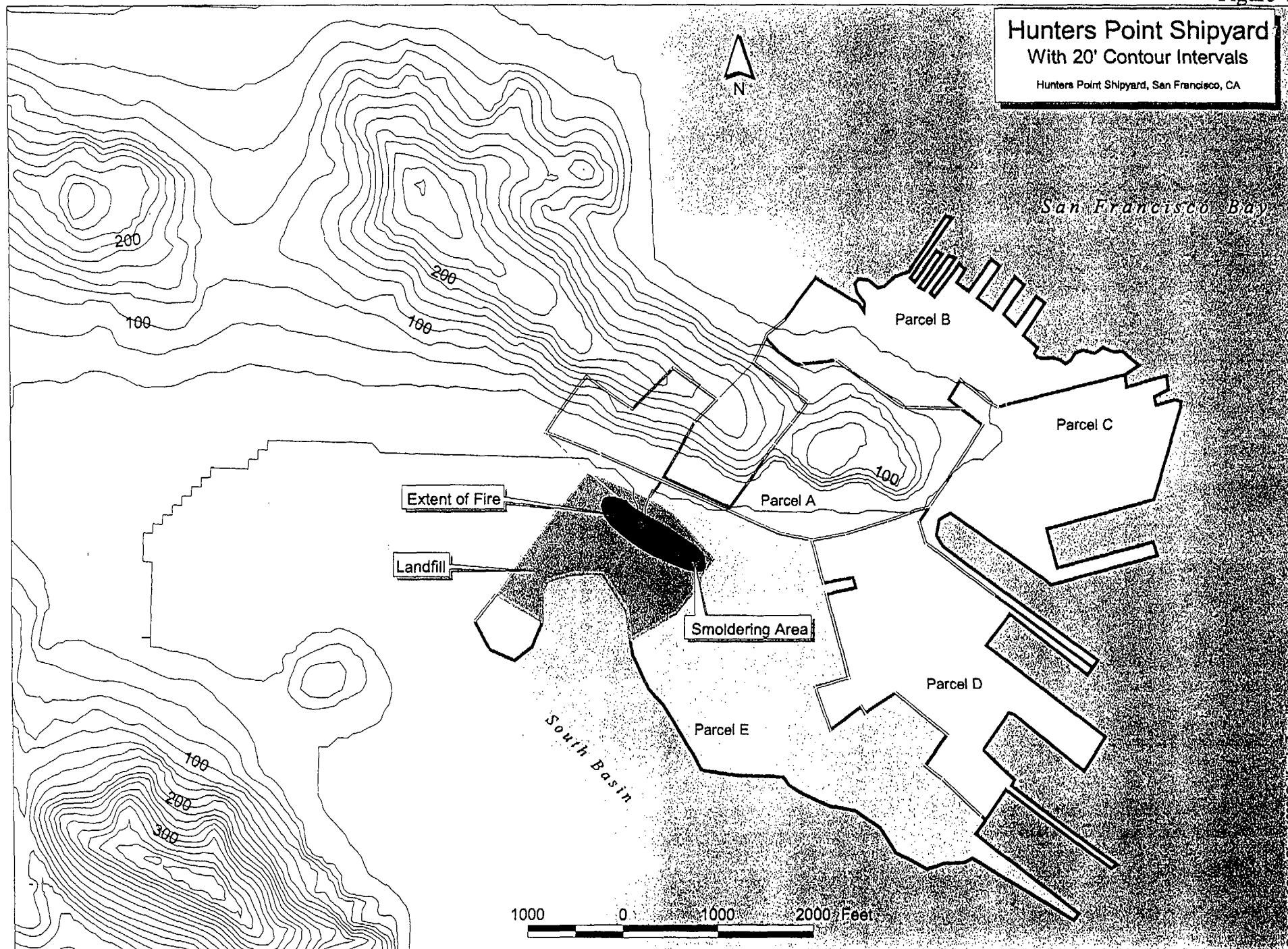


Figure 3

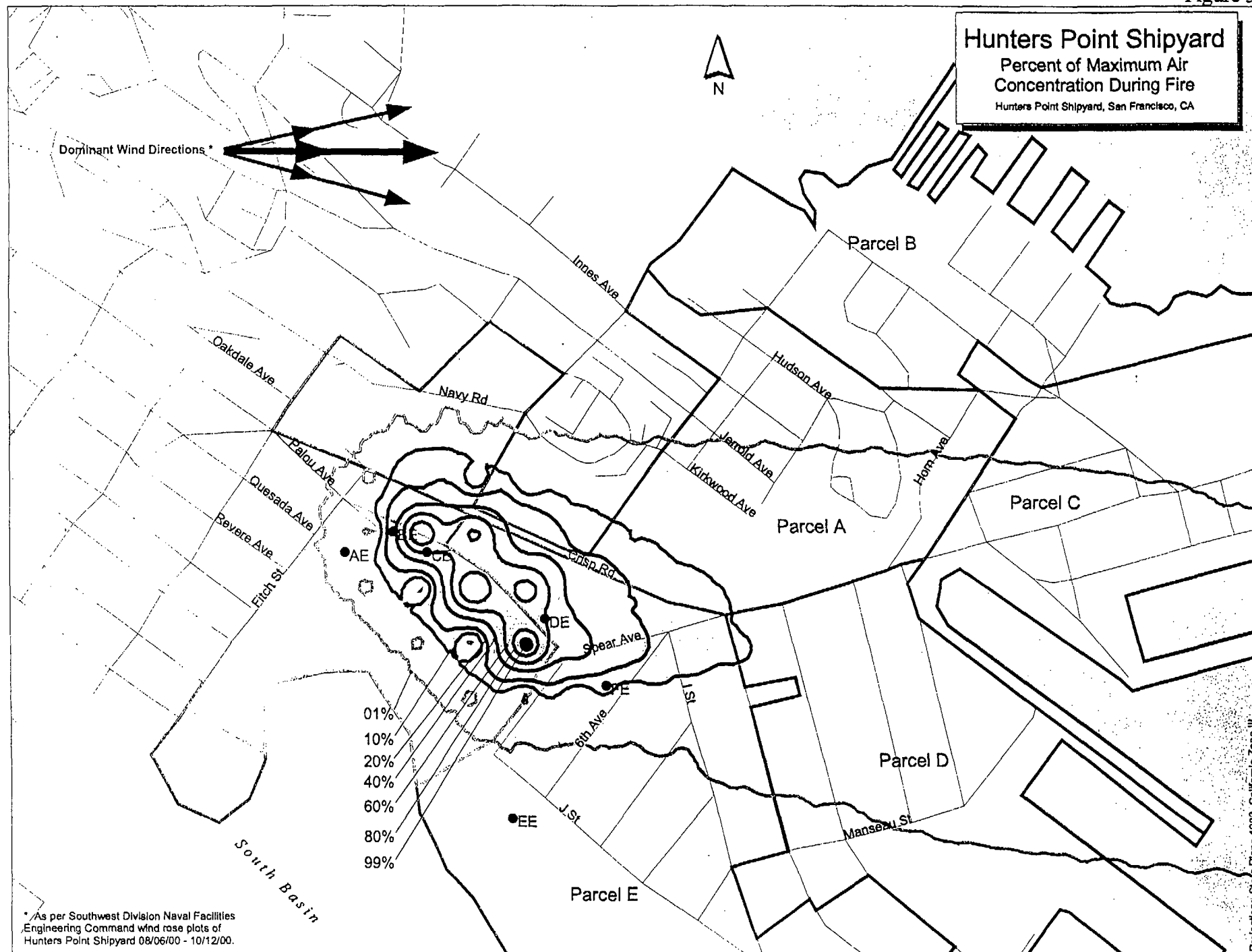
Figure 4



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Projection: State Plane, 1983, California Zone II

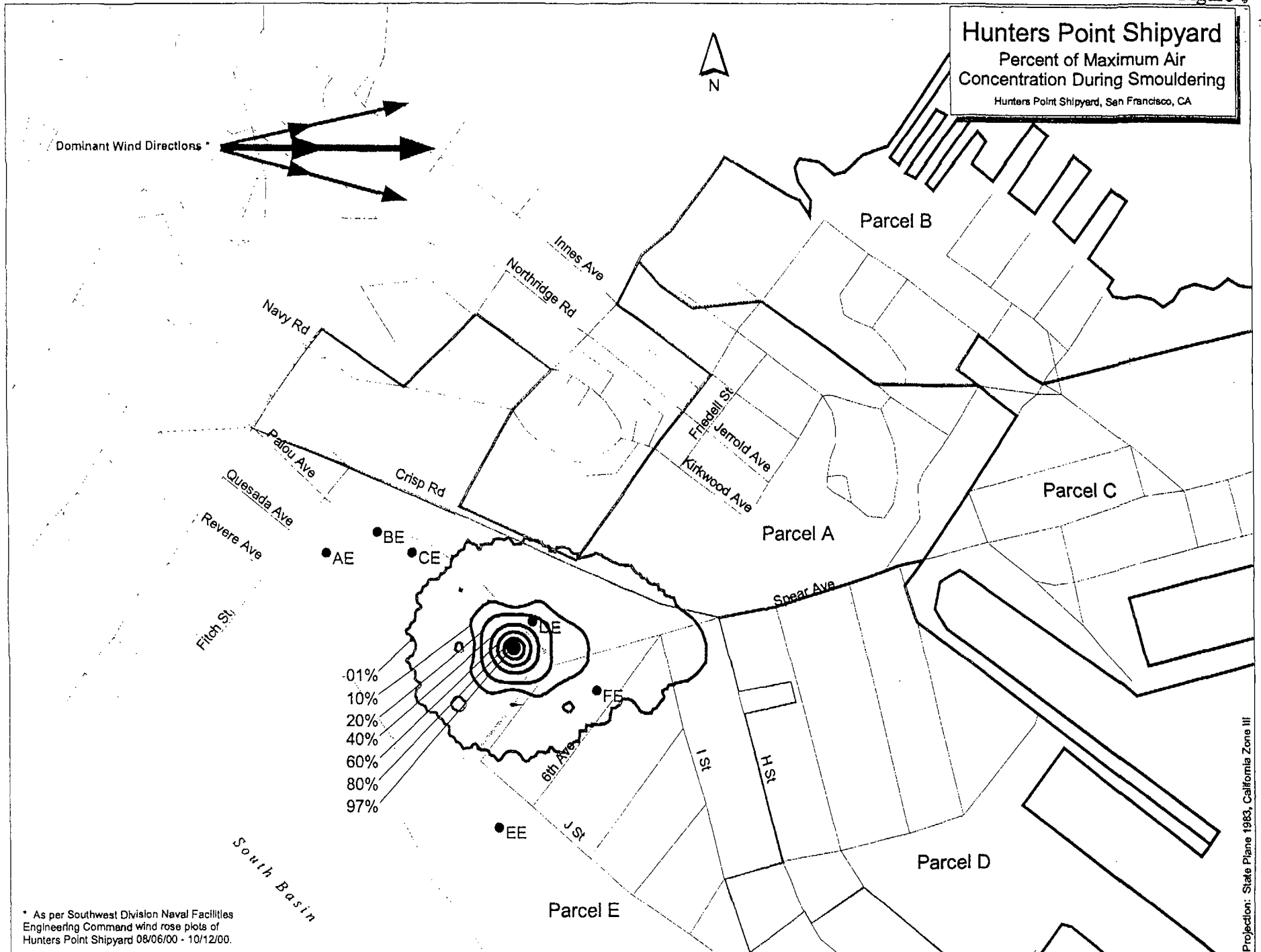
Figure 5



* As per Southwest Division Naval Facilities Engineering Command wind rose plots of Hunters Point Shipyard 08/06/00 - 10/12/00.

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Figure 6



Abbreviated Minutes

Lowman Radiological and Risk Assessment Subcommittee
HPS RAB Wednesday, January 26, 2005
Anna E. Waden Library

Attendees: M. Dunn - Resident, Clifton Smith - Environmental consultant, Jim Ansbro - Resident, Dr. Ahimsa Sumchai - subcommittee chair, Keith Forman - BRAC Enviro Coordinator, Ralph Pearce - Lead RPM Radiological, Patrick Brooks - Lead RPM HPS

Mr. Forman began the meeting by reintroducing Mr. Ralph Pearce as the Navy's lead RPM for Radiological operations at HPS and informed the attendees that RASO have been very busy devising a Basewide Work Plan for Radiological operations that will standardize matters like instrument calibration for the entire base. Technical issues such as the size of survey areas, buildings and grids will remain unique for each building, foundation or survey area inspected or remediated.

The major agenda topic was the status of the nine radiologically impacted building on Parcel B documented on pages 8-15 through 8-39 of the HRA. This topic was discussed because during city government proceedings before a hearing of the Department of Building Inspections on December 6, 2004 the DBI Commissioners specifically asked that the matter of the large number of radiologically impacted buildings on Parcel B be clarified in view of the fact that they were asked to approve CEQA findings for Parcels A and B with an incomplete documentation of the number of outstanding buildings on Parcel B evident in the November 2003 Addendum to the FEIR for HPS Phase I development. The Buildings include 103, 113, 113A, 114, 130, 146, 142 and 157. The most significant of these buildings is 103 a former personnel decontamination center that the FEIR indicates will not be demolished. It was constructed in 1951 and is likely the site of lead based paint. The HRA indicates it has been leased to the Redevelopment Agency and used by The Point Artists. Mr. Pearce states that the Phase V survey is complete and no contamination has been found.

Dr. Sumchai asked why these building will be retained under the proposed development scheme given its historical likelihood of residual contamination. Mr. Forman suggested that this question be raised to Mr. Cohen and Lennar Development representatives at the Thursday, 1/27/05 RAB meeting.

Focused discussion centered on Building 146 which is currently undergoing a Class I Survey and the historical and preliminary survey findings suggest contamination potential is likely. For the remaining buildings and footprints the current statistical analysis of raw data for those buildings surveyed suggest contamination potential is unlikely, specifically Building 113, 130 and 142. Buildings 114 and 157 and currently undergoing scoping surveys.

Technical Review Subcommittee
January 19th, 2005 Meeting Summary
Topic: Metals in Parcel B Soil, part 3

Attendees: Ryan Ahlersmeyer (Navy Project Manager), Andrew Baughman (Navy Project Manager), Pat Brooks (Navy Lead Project Manager), Amy Brownell (Department of Public Health), Keith Forman (Navy BRAC Environmental Coordinator), Tom Lanphar (DTSC), Lea Loizos, Kevyn Lutton, Clifton Smith (TAG contractor), Keith Tisdell, Ray Tompkins

The purpose of the meeting was to continue discussions from the October and November 2004 meetings, focusing on the metals in Parcel B soil. Having heard from the primary regulatory agencies (EPA, DTSC) at the November meeting, we invited the San Francisco Department of Public Health to provide us with the City's position on the issue. The end goal is to gain a complete understanding of the nature and extent of metals in Parcel B soil and the risks associated with them to determine appropriate cleanup and reuse options for the parcel.

Parcel B metals

After a brief overview of the previous meetings, Amy Brownell of the Department of Public Health spoke about the City's position on the metals in Parcel B soil. According to Amy, because the City is not a regulatory agency in the same sense as are the State and Federal EPA, the City is relying on the regulators to determine an appropriate cleanup. The City wants whatever cleanup is both health protective and safe and that allows for the planned reuse. The current reuse plans call for primarily mixed use that would allow for both residential and commercial uses. Much of the shoreline has been designated for open space and some areas on the northeastern end have been designated for research and development. Areas of mixed use typically have to meet an unrestricted residential standard. However, Ms. Brownell stated that if the public feels the property should have restrictions on it (due to the naturally occurring high levels of metals), then the City will follow the public will.

Keith Tisdell asked why the City would choose to take the property if it came with restrictions. He expressed concern about liability for the City in the future. The Navy explained that restrictions are safeguards that are put in place to cut-off pathways. (Pathways are the ways in which people may come into contact with contaminated materials. For example, by ingesting contaminated soil or by inhaling airborne soil and dust.) An example of an accepted restriction that is already in place is the restriction throughout the Shipyard to dig below 10 feet without the proper permits. Furthermore, there is a warranty in place that the Navy will come back if the remedy does not work or if something new is discovered.

Ray Tompkins raised a concern about the lack of split samples, that is, samples that are simultaneously collected by the Navy and the regulatory agencies and then sent to separate laboratories to verify if the results are the same. The Navy explained that it does happen occasionally, citing as an example split samples that were taken in December to verify the landfill gas sampling results. Amy Brownell noted that through the

Conveyance Agreement, the City has the ability to take their own samples to verify the Navy's results.

The discussion turned to the topic of cleanup levels. Keith Tisdell inquired why cleanup levels for wetlands and other habitat are sometimes more stringent than cleanup levels for residential areas. The Navy explained that ecological receptors usually spend more time in contact with the contaminated materials than humans do (for example, invertebrates that live in the sediments of the Bay). Furthermore, it takes a smaller dose of a toxic chemical to have an affect on most ecological receptors than it takes on humans as we are a much larger organism.

Ray Tompkins reiterated a previous concern that the cleanup standards being used do not take into account sensitive subpopulations. He cited the example of African-American males heightened sensitivity to manganese and other metals. Therefore, he is concerned that the risk may be underestimated. The Navy explained that some studies take sensitive subpopulations into consideration, however without empirical data, the current standards cannot be disproved. The Navy feels that best practices for dust control should be equally protective for sensitive subpopulations. Similarly, if the pathways are cut-off such that people cannot come into contact with the contaminated soils, this will work as a blanket remedy that is equally protective for all members of the population.

This led to a discussion about dust control. Ray Tompkins asked what assurances we have that proper controls will be taken. The Navy assured that the names and numbers for all those responsible would be provided before work began. A concern was raised that the community is not familiar with the local Navy contacts and overseers. The Navy agreed to bring the Resident Officer In Charge (ROIC) and Caretaker Site Office (CSO) employees to RAB meetings so that community members can become more familiar with them.

The discussion returned to the remaining issues that need to be resolved on Parcel B before a remedy can be determined. Lea Loizos inquired about the disagreement between the Navy and DTSC about whether or not the fill material used in Parcel B should be considered a release. Tom Lanphar explained that they have agreed to look at total and individual risk and to make risk management decisions based on total risk, that is, the risk from both Navy releases and ambient metals. They are confident that this will address all concerns and that the risk will be adequately reduced.

Some examples of remedies that will be presented in the Technical Memorandum in Support of a ROD Amendment include: complete coverage with an impermeable layer of asphalt or a 2 to 3 foot soil cap. Spills and releases will be dealt with separately. Ray Tompkins made a request that a risk factor for sensitive subpopulations is included in the risk assessments. The Navy explained that given the available data, separate numbers are not available. Lea Loizos asked the group to think about how we would achieve this goal of considering the surrounding sensitive subpopulations in calculating risk since there are no models or guidelines to work from. Ray Tompkins stated that this could be achieved by using the most stringent dust control measures available and to make them into ARARs (Applicable or Relevant and Appropriate Requirements). The need for

enforcement and compliance with air pollution control standards was stressed. Furthermore, Mr. Tompkins stated that when studies are available that show additional risk to subpopulations, the most conservative option should be taken in determining a remedy. Mr. Lanphar explained that due to the complicated fill history and nature of the fill material, it is difficult to adequately characterize the soil. He agreed that using conservative restrictions as a remedy would take care of any uncertainties with risk.

Concerns were raised about the liquefaction potential of the area. Amy Brownell explained that provisions would be in place such that in the event of an earthquake the site would have to be examined to determine the effects on the remedy.

Lea Loizos asked what standards will be used as cleanup goals. The Navy replied that the most recent PRGs (EPA's preliminary remediation goals) will be used and that the ambient levels will remain the same as those used in the ROD and throughout the Shipyard.

Once all questions and concerns were addressed, the Navy discussed the path forward in determining a remedy for Parcel B. The Technical Memorandum in Support of a ROD Amendment (TMSRA) is due this summer. It will provide the new risk assessment showing the latest understanding of the situation. The report will propose new remedies that match cleanup to reuse. A suggestion was made that the report be the sole topic of a RAB meeting when it is released and that all parties, including the regulators, present their perspectives on the report.

Other concerns:

Keith Tisdell mentioned some concerns with digging that he saw occurring on the UCSF parcel adjacent to Parcel E2. The Navy explained that UCSF is rerouting sewer lines and doing some electrical work, which explains the digging. The trenches are no deeper than 8 feet.

Submitted January 26, 2005

By Lea Loizos, Technical Review Subcommittee Chairperson



City and County of San Francisco
DEPARTMENT OF PUBLIC HEALTH

Gavin Newsom, Mayor
Mitchell H. Katz, M.D., *Director of Health*

OCCUPATIONAL & ENVIRONMENTAL HEALTH

Rajiv Bhatia, M.D., M.P.H
Director of EHS & OSH

DATE: January 20, 2005

TO: Restoration Advisory Board and other community members

FROM: Amy Brownell, P.E.
Site Mitigation Engineer
415-252-3967

SUBJECT: Contacts for Health and Safety Issues during Parcel A Redevelopment

This memo contains a brief list of contacts for community members who have concerns about Health and Safety issues during the Redevelopment of Parcel A.

If there is an immediate life safety issue (fire, flooding, sewage overflow etc), you should call 911 and let properly trained emergency personnel handle the situation.

For less immediate situations or when the life safety issues have been addressed, the first contact should be made to Lennar/BVHP. They will be in charge of the redevelopment of Parcel A and will also be the master tenant for all the tenants on Parcel A. The main contact is:

Gary McIntyre
Lennar Communities
49 Stevenson St., suite 525
San Francisco, CA 94105
415-995-1770 x514
gary.mcintyre@lennar.com

Please try to contact Lennar first, because if you contact anyone below it is likely that our first call will be to Gary McIntyre to see what he knows or has done about the situation.

If you believe Lennar/BVHP or its contractors or subcontractors are not following proper construction procedures, the developer is required to meet and confer with you and a representative of the San Francisco Redevelopment Agency (SFRA) in a good faith attempt to resolve your complaint. You may initiate a meeting with the developer and the SFRA to discuss how to resolve your complaint by contacting Gary McIntyre at Lennar or any of the following SFRA contacts:

- 1) Nicole Franklin, Project Manager, 415-749-2592, Nicole.franklin@sfgov.org
- 2) Gaynell Armstrong, Assistant Project Manager, 415-749-2593, gaynell.armstrong@sfgov.org
- 3) Sylvester McGuire, Contract Compliance Officer, 415-749-2427, Sylvester.mcguire@sfgov.org
- 4) Joanne Sakai, Deputy Executive Director of Community and Economic Development, 415-749-2441, Joanne.sakai@sfgov.org.

HAZARDOUS WASTE UNIT

Phone (415) 252-3800

1390 Market Street, Suite 210, San Francisco, CA 94102

fax (415) 252-3964

Although it is recommended to try and resolve concerns directly with Lennar/BVHP or the SFRA, you may also contact other agencies. Some other agencies with oversight and enforcement capabilities are:

QUESTIONS OR CONCERNS SPECIFIC TO DEMOLITION OF BUILDINGS OR GRADING THE SITE

During the demolition and deconstruction of the existing Parcel A buildings, the SF Department of Building Inspection, Building Inspection Division at 415-558-6096 will be enforcing the provisions of the Demolition permit. Complaints about noise and dust from the demolition can be taken at this number.

During the grading (moving dirt around and preparing the site for construction of buildings) the Department of Public Works will be issuing the Grading Permit. The inspection and enforcement of the permit requirements are the responsibility of the DPW, Bureau of Street Use and Mapping and their number is 415-554-5810. Concerns about dust control measures and storm water runoff issues during grading can be handled at this number.

Under the new Article 31 of the Health Code, the SF Health Department will be requiring Lennar to submit the following plans prior to receiving their grading permit from the Department of Public Works:

- Site Evaluation Report
- Dust Control Plan
- Health and Safety Plan (includes contingency plan)
- Storm Water and Erosion Control Plan
- Soil Disposal Plan (if applicable)
- Lead Based Paint in Soil Sampling Plan
- Contingency Plan for Abrasive Blast Material (may be a section of Health and Safety Plan)

These plans, once submitted, will be public documents and available for review. When Lennar has completed their grading work, they will be required to submit a Closure Report, describing how they implemented all of the above plans. The Closure Report will also be available for public review. In addition, the Health Department will be working with Lennar and its consultant, CH2M Hill, to mitigate lead based paint hazards, if they are found during the lead based paint soil sampling. If you have specific questions or concerns about implementation of the Article 31 provisions you may reach me, Amy Brownell, at 415-252-3967, amy.brownell@sfph.org. I will also be happy to review the Article 31 process with any individual or at a future public meeting.

GENERAL QUESTIONS ABOUT REDEVELOPMENT OR CONCERNS NOT NECESSARILY RELATED TO DEMOLITION AND GRADING

For general concerns about the construction or redevelopment, to reiterate, the first call should be made to Gary McIntyre at Lennar at 415-995-1770.

However, if you need additional help with general construction and redevelopment issues, you may call Nicole Franklin, Gaynell Armstrong, Sylvester McGuire or Joanne Sakai at the San Francisco Redevelopment Agency at the numbers listed above. They can set up a meeting with Lennar if you wish to use the meet and confer provision mentioned above.

For tenant and leasing issues Nicole Franklin at SFRA, 415-749-2592, Nicole.franklin@sfgov.org can also assist, if your calls to Lennar have not solved the problem.

SOME ADDITIONAL RESOURCES AT OTHER DEPARTMENTS OR AGENCIES:

For complaints about air pollution, which includes dust and odors, the Bay Area Air Quality Management District number is 1-800-334-6367. They will investigate any dust and odor complaints. You can also call this number for concerns or complaints about asbestos and asbestos abatement.

For complaints about unsanitary conditions you may call the SF Health Department Public Services and Complaint Program at 415-252-3805 or 415-252-3800. The specific unsanitary conditions that they can investigate include problems with rodents, ponded water on the construction site (might breed mosquitoes) and sewage spills on the construction site.

If you have general questions about asbestos or asbestos abatement you may contact Dave Rizzolo at the SF Health Department at 415-252-3951, david.rizzolo@sfdph.org.

Garbage on Public Streets = 415-695-2017 at SF Department of Public Works

Sewage on Streets or Sidewalks = 415-695-2017 or 695-2020 (after hours) both at SF Department of Public Works

Hazardous Materials Spills particularly if they might impact the Bay: 1-800-852-7550 at the California Office of Emergency Services

Storm Water Runoff from Construction Sites: 510-622-2369 the Complaint Response Line at the SF Regional Water Quality Control Board